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# China Report

ECONOMIC AFFAIRS

No. 221



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## NATIONAL POLICY AND ISSUES

### EXPANSION OF MACHINE BUILDING INDUSTRY ENVISAGED

Beijing JINGJI GUANLI in Chinese No 12, 15 Dec 81 pp 12-15

[Article by Sun Xiaoliang [1327 2400 5328]: "There Is a Promising Future for Expansion of the Machine Building Industry"]

[Text] Readjustment of the national economy calls for readjustment of the service orientation in the machine building industry. Instead of purely serving heavy industry, as it did in the past, it now has to serve the light and textile industries, people's daily life, and technical transformation. As to the policy to be adopted in this readjustment, however, there are different views as well as different methods of implementation.

I. Should readjustment of the machine building industry be guided by the "change of residence registration" policy, or should there be an expansion of the scope of its service?

A mold factory under the Changchun Machine Building Bureau was originally intended for serving a machine-building plant. As a result of the readjustment, it became affiliated with a bicycle plant and began to produce bicycle molds. This method of affiliation is known as "change of residence registration." Some comrades believe that this is the "most realistic and most feasible" method to change the service orientation from heavy to light industry.

The Changchun Machine Building Bureau also had under it a precision casting plant, originally serving the machine building plants. Now it has converted its line of production to serve the society as a whole. It is ready to produce and supply according to contract any type of precision castings to any place. Some bicycle parts of complex geometrical shapes, for which processing with machinery is difficult, can be made into precision castings, and the plant has now undertaken this production task. Thus, although the plant's organizational affiliation remains unchanged, it is now serving various trades and undertakings, including the light industry, instead of the machine building industry alone.

In our opinion, the second method is the proper one to implement the policy of readjustment in the machine building industry for the following two reasons:

First, it would be more correct to say that the scope of service for the machine-building industry in the past was "narrow" than to say that its service orientation was "deviated." Therefore, in readjusting its service orientation, we cannot simply divert it to light industry and forget all about heavy industry. Such has been the case with the mold factory in being affiliated with a bicycle plant. Viewed from the standpoint of social needs, this is only a change from one extreme to another. For the development of the machine building industry itself, it would be more desirable to expand the scope of its service. In the past, its ups and downs were linked with the changes of fortune in heavy industry; in the future, such ups and downs will still be inevitable as a result of the readjustment in various trades and undertakings.

Second, changes of organizational affiliations can never break through trade barriers. In the past, the mold factory under the machine building bureau did not produce any molds for the bicycle plant; in the future, the bicycle plant will not let its mold factory produce molds for the machine building plant. We can break through the trade barriers only by organizing production in accordance with the principles of commodity economy and by expanding the scope of service as the precision casting plant did.

From this, we can see that the change of organizational affiliation alone cannot induce people to exert their efforts in either ideology or actual work; only expansion of the scope of service can have these effects.

### III. Is the objective of readjustment in the machine building industry only the addition of some new products or is it the increase of its adaptability?

Readjustment in the national economy calls for due changes in the product mix of the machine building industry. However, the objective of readjustment in the machine building industry is not only the addition of some new products, but also the increase of its adaptability, for the following two reasons:

1. Adaptability is the "backup force" for the expansion of the scope of service. Some enterprises are either operating under capacity or are incapable of designing and manufacturing the mechanical and electrical products which are obviously in great demand on the market. When they are finally capable of producing them, other plants are ahead of them and have already dominated the market. The problem with these enterprises is that they lack adaptability. The so-called "difficulty in turning around" is in fact a sign of their poor adaptability.
2. There should be developments and changes in social needs. The poor adaptability of the machine building industry is a serious defect exposed in the course of the national economic readjustment. If an enterprise can produce only a few products, it will not be able to adapt itself to social changes and can only grope in the dark or "suffer hunger."

An enterprise's vitality is largely determined by its adaptability. The Hangzhou Oxygen Machinery Plant is a good example. In the past, this plant only produced heavy oxygen-making machines. In 1979, when the scale of capital construction was curtailed, the need for these machines was also sharply reduced, and this plant was expected to run at a loss. Under these conditions, it began producing nitrogen-producing equipment based on the requirements of glass plants and liquid nitrogen cans based on the requirements of animal husbandry. It also imported foreign technology to produce equipment for power generation with residual heat, and began manufacturing many products to meet social needs by giving full play to its own special technical skill. As a result, instead of suffering any loss, this plant made more profits than it did in the preceding year. Its achievements were simply due to its strong adaptability. The case of a machine-tool accessory factory is exactly the reverse. This factory always produced two types of rotary tables for lathes; its technicians and workshops were only able to design and manufacture these two types, while the leading cadres never thought of producing anything else. In the past 2 years, the demand for these rotary tables has been greatly reduced, and this enterprise has remained in a very passive position.

According to the theory of life cycles, any product, no matter how popular it may be at present, will become not much wanted some day when the demand for it has reached the saturation point because of the development of technology or changes in the relationship of supply and demand. This is a normal pattern. Therefore, an enterprise should be able to produce simultaneously several types of goods, some in hot demand, others in diminishing demand, and still others in growing demand. By this means, we will have "light in the west despite darkness in the east," and be constantly occupied with production tasks. The enterprise will be full of vitality.

To increase adaptability is a very arduous task, requiring a strong design force as well as highly versatile technical personnel. There should also be a scientific organization of production, and the old practice of "sealing the workshops" can never be effective. The enterprise must have a suitable number of skilled workers who can carry out more than one sequence of operations. There should also be a fairly high level of business management, which should be good at organizing many types of production. If, after the readjustment, all the enterprises of the machine building industry can meet all these requirements and increase their adaptability, then we can say that the readjustment has been a success. On the other hand, the addition of several new products without a striking increase in adaptability cannot contribute to the success of readjustment, because certain changes in future social demands will land the enterprises in a passive position again.

### III. When required to produce more types of goods in order to expand their scope of service, should the enterprises "do anything they can get hold of"?

At present, many enterprises are actually "doing anything they can get hold of" because "a hungry man cannot be choosy about his food." A casting plant is now producing sofas; a turbine plant is producing electric fans; a machine-tool plant is producing motor vehicles; and some plants are

producing one type of product one year and another type the next year. As a temporary expedient to "appease hunger," this method of production is above reproach. As a permanent measure, however, it will not only be helpless in gaining new professional skill but will lead to the loss of whatever professional skill was previously gained. This will be disadvantageous to the enterprise's long-range development. It is certainly true that enterprises of the machine building industry should expand their scope of service and increase their types of products. However, such increase should be guided by principles and cannot be without limit.

What are the principles guiding the increase in the types of products? These are now divergent views on this point. Some hold that the principles cannot distort the original orientation of production, or else it will mean "disorder" or "failure to attend to one's regular duties." In our opinion, this view does not suit the present and future situations. We must be aware that the original orientation of production was based on the system of production, supply and marketing determined by the administrative affiliations of the enterprise and on the principle that the production of different products should be the responsibility of different trades. According to its original orientation, for example, an oxygen-manufacturing plant can only produce machinery products for making oxygen, and of a few specifications only; a machine-tool plant can only produce machine tools, also of a few specifications. It is because of these "narrow" and "rigid" orientations that the enterprises have become helpless in the face of objective changes in demand. Now that we have "bumped against the wall," it is high time for us to turn around.

Practice has proved that an enterprise of the machine building industry wishing to increase its types of products must as a matter of principle bring into play its own special skill. It must actively produce its own specialty, regardless of the original orientation or the department affiliations. The No 2 Nanjing Machine-Tool Plant originally produced gear processing machines; now it produces needle cylinders for welf-knitting machines. The needle cylinder is a key accessory of welf-knitting machines, and had to be imported from abroad in the past. Later, it was produced by the repair workshop of a textile mill, but its precision and heat treatment techniques did not meet the required standards. The quality was poor and its service life was short. The No 2 Nanjing Machine-Tool Plant, which had for a long time produced gear-hobbing machines and specialized in precision techniques, later took over this task. Its trial production was a success, and its products soon became well known. Thus, in addition to gear-hobbing machines, it is now also producing welf-knitting machines and their needle cylinders. From their outward appearance, we can see that the first type of products are machine-tools while the second type are textile machines, which do not fit in with the original orientation. Furthermore, one type is under the direction of the First Ministry of Machine Building, while the second type is under the Ministry of Textile Industry. This does not seem to be logical. In fact, both types of products require the same high-precision techniques, and the production of welf-knitting machines and needle cylinders by the plant producing gear-hobbing machines is like driving a car along a familiar

road, which is quite logical both technically and economically. Similar instances can be found in the Hangzhou Oxygen-Manufacturing Plant, which produces residual heat power-generation equipment by importing the technology of expansion engines; in the Zhejiang Vacuum Pump Plant, which produces can-sealing machines by developing its own specialized vacuum techniques; and in the Shenyang Mining Machine Plant, which produces magnetic rollers for textile machines by making use of its specialized skill in producing magnetic equipment. It is true that this method of increasing the types of products does not conform to the original orientation of production, but it does not create any "disorder." On the contrary, the more developed is this method, the higher will be the specialized skill of the enterprises and the stronger will these enterprises become in their competition with others.

IV. Is there any contradiction between the increase in the types of products among enterprises and their reorganization for specialization?

In view of the specialization required in our country at present, an increase in the types of products will certainly create some contradictions. According to the requirements of specialization, the types of products of an enterprise should be as few as possible in order to facilitate mass production and to improve the economic results. However, judging from the trend of development in the machine building industries in various countries in the world, specialized products as a step in the development of specialized production is now on the way out to make room for the specialization of accessories and spare parts and of technology. Instead of being mutually contradictory, the specialization of accessories and spare parts and of technology, on the one hand, and the increase in the types of product, on the other, should be "interdependent."

Let us cite an example. In Japan, there is a Fuji-Tongfanake Company with only some 800 workers which mainly produces digital control machine tools and their spare parts, digital control milling machines, manipulators, servomotors and others, totaling more than 80 types under 21 major categories. However, all the accessories and spare parts have to be bought from other specialized plants, while the castings and forgings are all made with outside help. Because of the wide range of products to meet different needs, this company is doing good business with many countries in the world, and each yen of its capital can be used to produce 22 yen worth transactions in 1 year. Obviously, such good economic results are inseparable from the great variety of products. If there were not specialization in the production of accessories and spare parts, this company would have to design and produce thousands of different accessories and spare parts for each type of product, in which case, it could not possibly produce so many different types of products.

V. Will there be any further room for future development if the expansion of the scope of service is to be continued?

Some comrades have these doubts: Since the scope of service for the machine building industry has continued to expand for more than 2 years, will there be further room for future development?

The answer is an unqualified "yes." Even without taking into account the international market, there is still plenty of room in the home market.

There are 800 million people in need of electrical appliances of various types in the countryside. Here is a very large market. For example, the use of marsh gas for power generation will solve the problem of lighting and other daily needs, and at the same time save large quantities of diesel oil. The peasants can afford to buy and use them. The installation of an 8-kw marsh gas generator, including the construction of a marsh gas pool, costs some 4,000 yuan and can help cut down diesel oil consumption by 60-70 percent. Again, wind power is abundant in areas south of the Changjiang River and the grassland in the northwest, and one 3.8-horsepower high-speed windmill, costing only 3,000 yuan, can take care of the irrigation of more than 200 mu of farmland at a saving of more than kilograms of diesel oil each year. According to investigations conducted in Yantai Prefecture, the lack of adequate transportation, storage and processing facilities has led to the spoilage of large quantities of fruit every year. The pears of Laiyang County enjoy national fame. In 1978, a certain commune produced 18 million jin of them, but lost 4 million jin, or 22 percent, through spoilage. If they could be locally processed into fruit juice, the spoilage could be greatly reduced. However, the county is still short of processing facilities. There are only a few processing factories, and they use indigenous methods whereby the fruit, contained in gunny sacks, has to go through a hand-operated press. The efficiency is low and the hygienic conditions are poor. Therefore, modern processing equipment is urgently needed.

Large quantities of technical equipment are needed now that the state has decided to increase the production of daily consumer goods. According to an analysis conducted by the Ministry of Light Industry, there are now approximately 2,500 types of special light and textile equipment, mostly produced in the 1940's and 1950's. Approximately 1,000 of them are barely serviceable; 900 of them are in need of improvement, and 600 of them are due to be written off. Some of them were produced with techniques nearly a century old and can hardly be called machinery. Cinnamon oil, for example, is a spice of high commercial value, exported at a price of \$60,000 per ton. At present, this oil is extracted from the cinnamon leaves by boiling in a huge cauldron. The extraction rate is low and large amounts of these leaves are simply wasted every year.

Large quantities of machinery products are required in various sectors of the national economy for technical transformation, particularly for the improvement of energy conservation techniques. There are now in our country more than 200,000 industrial boilers consuming more than 200 million tons of coal, or approximately one-third of the total national consumption, each year. Their performance is backward, and the average thermal efficiency is only 55-60 percent. After certain improvement, the thermal efficiency of these boilers could be increased by 10 percent. If all the boilers were improved, we could save 30 million tons of coal each year, and the investment could be recovered in 2 years. So there is another task for the machine building plants. At present, there are throughout the country some

3,400 small cement factories with an annual output of 20,000 tons. Most of them are using crude equipment which consumes a lot of energy and produces cement of poor quality. If all their indigenous kilns were replaced by vertical mechanical kilns, more than 10 million tons of coal could be saved each year. Here again, huge quantities of machinery products are required. These are but a few examples. At present, the technical equipment in all trades is fairly backward. If the equipment were improved in a planned way, there would be a good market for machinery.

The machine building industry has never paid any attention to the food industry as a sphere of service. According to recent investigations by departments concerned in the food industry in the Beijing area, most of the processing jobs are being carried out manually, except in a few large plants. The mutton with sauce produced by Yueshengzai, the Tianfu brand pork with sauce, and the southern specialties produced by Kweixiangcun are all well known at home and abroad. However, they all depend on the "specialize" skill of the cooks milling around the kitchen fire." The production efficiency is low and the supply can never meet the demand. That is why people sum up the situation in these words: "There is an urgent need to produce special equipment, to improve the backward equipment, to make up the shortage of equipment, and to produce complete sets of equipment."

From what has been pointed out, we can see that there are good prospects for expanding the scope of service for the machine-building industry, and this expansion has by no means "almost reached the end of the line." The key lies in working steadfastly, in investigating social needs, and in meeting these needs.

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## ECONOMIC MANAGEMENT

### ANSHAN COMPLEX EXPERIENCE DURING READJUSTMENT DESCRIBED

Beijing JINGJI GUANLI in Chinese No 12, 15 Dec 81 pp 46-47

[Article by Anshan Iron and Steel Complex: "Seek Speed by Tapping Potential During Readjustment"]

[Text] Since the Third Plenary Session of the 11th Party Central Committee, the Anshan Iron and Steel Complex has proceeded with the elimination of the leftist influence, the summing up of historical experience and the resolute implementation of the policy of national economic readjustment by actively serving light industry and the market. Making use of the existing facilities, it has made great efforts to increase the variety of products, to improve their quality, to lower the consumption of energy and raw materials, and to earn more profits. Through the tapping of potential, technical renovation and transformation, and improvement of the economic results, the enterprise has been able to maintain a certain speed in the development of its production during the period of readjustment. Compared with 1978, its 1979 output of steel was increased by 25,000 tons; that of iron, 258,000 tons; that of rolled steel, 203,000 tons; the total output value, 6.41 percent; and the profits handed over to the state, 1.6 percent. In 1980, all the economic and technical indexes surpassed even the highest level previously attained. Compared with 1979, the output of steel was increased by 78,000 tons; that of iron, 41,000 tons; that of rolled steel, 150,000 tons; the total output value, 1.22 percent; and the profits handed over to the state, 9.2 percent. The rate of profit increase through tapping potential greatly exceeded the rate of total output value increase.

In 1980, the amount of energy supplied to this company was fairly greatly reduced, and this could have meant a gap in fulfilling the production plan. However, with the adoption of measures to conserve energy and to tap potential in production, it is anticipated that this year it will be able not only to overfulfill the state production plans, but also to gain more revenues than it did in 1980, despite a reduction in output, and to continue to maintain a certain rate of profit increase. How can we maintain a certain growth rate during the readjustment period when the state will not further invest in the enterprise and will even reduce the energy supply?

1. We must rely on tapping potential.

Before 1978, the utility rate of rolled steel for a long time remained at approximately 75 percent. If it can be increased by 1 percent every year, it will mean an addition of more than 50,000 tons in production. Since 1979, after intensive efforts in tapping potential, we have taken three gigantic steps forward in 3 years. In 1979 output exceeded that of 1978 by 1.64 percent, with a net increase of 86,000 tons of rolled steel and a profit of 25 million yuan; the 1980 output again exceeded that of 1979 by 2.35 percent, with a net increase of 125,000 tons and a profit of 37 million yuan; and the output in the first 8 months of 1981 exceeded that of the same period in 1980 by 0.92 percent, with a net increase of 30,000 tons and a profit of 9 million yuan. For a period of more than 2 years, we have had a net increase of 241,000 tons of rolled steel with a profit of 71 million yuan by raising the utility rate alone.

The main handicap we experienced in maintaining a certain rate of development was the shortage of energy resources. Because of the general energy shortage in the past 2 years, we decided not to ask the state for any further supply or to compete with light industry in the scramble for energy. We treated energy conservation as a strategic task in the course of readjustment, and tried by every possible means--such as improvement of management, readjustment of the fuel make-up, and scientific organization of production--to tap energy resources. By these means, we succeeded in increasing production and reducing energy consumption. The overall energy consumption per ton of steel in 1979 was reduced by 5.6 percent compared with 1978, and that of 1980 was again reduced by 3.5 percent compared with 1979. In these 2 years, the amount of energy saved was equivalent to 500,000 tons of standard coal. In the first 8 months of this year, the overall energy consumption per ton was further reduced to 1.2 tons of standard coal, or 2.04 percent less than in 1978, representing a saving of 43,800 tons of standard coal.

## 2. We must rely on technical transformation according to the customers' requirements.

The Anshan Iron and Steel Complex is an old enterprise with outdated equipment, backward technology and an irrational product mix. If we do not systematically adopt advanced methods to renovate and transform our equipment, and if we cannot solve the problem of internal imbalances, we can never maintain any rate of growth during the readjustment period. Furthermore, in another 7 or 8 years, it is possible that some old equipment will not be serviceable any more. Since implementation of the policy of readjustment, the leadership at every level in the enterprise has treated technical transformation as an important link in the task of readjustment. The guiding ideology of relying on state investment for starting new projects and developing production extensively has been changed to relying on the renovation and transformation of the existing equipment to develop production intensively. Instead of auto-cycling in production, we have improved our product mix in order to better serve the market for consumer goods. Furthermore, we are now stressing a harmonious proportionate relationship and comprehensive economic benefits, instead of one-sidedly striving for output. Since 1979, the leadership has raised funds through various

channels afforded by the expansion of the decisionmaking power to enterprises--such as retention of profits, enterprise transformation funds, utilization of the three wastes, bank loans, and other flexible measures--for technical transformation through the adoption of advanced technology, work-process and equipment, and has gained marked results. Many transformed items of equipment produced benefits and yielded profits in the same year. For example, the No 1 Steel Plate Factory adopted the advanced technique of high-frequency welding in two production lines for the welding of pipe. Each year, these production lines are capable of producing 40,000 tons of welded pipe--which is urgently needed by light industry and on the market--with a profit of 4.5 million yuan, bringing up the profit level from 6 million to 10 million yuan. The small steel rolling factory has transformed its small wire workshop, which is now capable of producing 200,000 tons of steel discs and steel thread bars, and can yield a profit of some 20 million yuan, or a full return of the investment in 1 year. The No 2 Steel Plate Factory had a loan of 360,000 yuan from a bank, and in 3 months, it completed a production line capable of producing 10,000 tons of galvanized sheet each year. In only 5 months, beginning in August 1980, when this production line began operation, the profit earned amounted to 1.03 million yuan, or three times the investment in the project. In the past 2 years and more, the company has carried out a total of 162 projects to tap potential and technical renovation and transformation, with very good economic results. Compared with 1978, the production of goods in short supply was increased by 120,000 tons; the proportion of products urgently needed in light industry and on the market was raised from 45.26 percent to 60.3 percent; and the quality of products has been raised to the highest level in history, with 19 varieties being rated as fine products by the country, the province and the ministry. There has been continued increase of new varieties, with 43 new steel products of 126 new varieties, including thin steel plate with color plastic coating, enamel pressed steel, and bicycle pipe. From the way in which the company has carried out technical transformation, gained an all-round improvement of economic results and continued the development of production, all through self-reliance, we can see that there are bright prospects for old enterprises not only to survive but also to be developed by relying on technical transformation.

### 3. We must rely on the improvement of business management.

The improvement of business management has fully aroused the enthusiasm of workers and staff members. This is the innate driving force in striving for a growth rate during readjustment. The most serious obstacle to business management in the past was the improper handling of the relationship between rights, responsibilities and interests. There was no connection between the enterprise and the various plants with regard to economic results and benefits. Good business or poor business of the enterprise made no difference to the plants, and the system of distribution within the plants was not based on the principle of "to each according to his work." Instead, there was equalitarianism and "eating from the same pot," which seriously dampened the enthusiasm of the workers and staff members. Since the Third Plenary Session of the 11th Party Central Committee, the improvement of business management and economic results have been treated as an

important task in readjustment. On the basis of continued total quality control and the revised system of rewarding, the system of economic responsibility in various forms was gradually promoted. The complex inspected the profit levels within various plants, and broke down the planned profit indexes to be distributed among different plants, which in turn divided their own share among the workshops and work teams. Thus everyone has his own responsibility for certain indexes, and mass enthusiasm for increasing production and practicing economy has risen to an unprecedented level. More than 100,000 workers and staff members are now all genuinely concerned about economic results. The amount of planned profit for the general chemical industrial plant in 1980 was 57 million yuan. If the profit had to be realized on the basis of planned output, only 52.25 million yuan of profit could have been expected. However, the system of economic responsibility of linking rewards with labor prompted everyone to offer ideas for profit making, and the profit plan was even overfulfilled by 260,000 yuan, an increase of 22.9 percent over 1979. In the past, the reception department had to be subsidized every year in amounts of over 100,000 yuan. After the adoption of the system of economic responsibility for its own surpluses and deficits, this department made a profit of 300,000 yuan in the same year. In 1980, the complex handed over to the state a profit of 1.15 billion yuan after overfulfilling the quota. This year, when the output of steel, iron and rolled steel is expected to be reduced by a wide margin, it may still be able to increase its revenue despite reduced output, and maintain a certain growth rate.

Since the beginning of the readjustment, the complex has helped increase state revenue by 590 million yuan according to the production plan, and the enterprise has also increased its own revenues by 134 million yuan as a result of the expansion of its decisionmaking power. With the increased revenues, the enterprise has been able to increase its funds for technical renovation and transformation, to build more workers' dormitories, and to improve the workers' livelihood. Practice has proved that during the readjustment period, a certain growth rate should be maintained in heavy industry. However, it is necessary to adopt a policy of strengthening business management, carrying out technical transformation and improving the economic results.

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## ECONOMIC MANAGEMENT

### NEED FOR ACCOUNTING IN ENTERPRISE MANAGEMENT STRESSED

Beijing CAIWU YU KUAIJI [FINANCE AND ACCOUNTING] in Chinese No 1, 20 Jan 82  
pp 3-8

[Article by Tang Tengxiang [0781 7506 5046] of the Fuzhou Municipal Finance and Accounting Association: "The System of Economic Responsibility and Accounting for Enterprises"]

[Text] The system of economic responsibility for enterprises is now widely practiced throughout the country. This is a brand new development as an antithesis to the system of unified receipts and expenditures, or "eating from the same pot." It has stirred people's imagination and broadened their vision. For all financial work, including accounting, it is now necessary to choose a suitable system of economic responsibility.

The system of economic responsibility is a simplified term; its deep implication is a system of production and business management in which the rights, responsibilities and interests of the state, the enterprise and the individual are integrated and which has a combination of economic rights, economic responsibilities and economic results as its main feature. The basic aims of this system are: (1) to give full scope to the efforts of the economic entities and the broad masses of workers in production and business operation; and (2) to improve social economic results and to distribute the economic benefits among the state, the enterprises and the workers and staff members in a reasonable way.

Accounting is a tool of production and business management for enterprises. It reflects and controls the movement of operating funds and the results of productive and business activities. Productive activities are the most basic form of human activity, while the production of material supplies is the foundation of existence and development of human society. From the very beginning of their engagement in production, people were concerned with the consumption and the achievement of their labor; then a set of methods and means for reflecting and controlling the consumption and achievement of labor was discovered. This is the simplest explanation for the birth and development of bookkeeping (accounting). The development of social production and the increase in economic activities, far from leading to the weakening or disappearance of accounting, have actually made the theories, methods, forms and means of accounting more elaborate, more specific and more effective.

As to the trend of development in accounting, many people can remember this passage from Marx works: "Bookkeeping, as the control and ideal synthesis of the process, becomes more necessary the more the process assumes a social scale and loses its purely individual character. It is therefore more necessary in capitalist production than in the scattered production of handicraft and peasant economy, more necessary in collective production than in capitalist production." ("Collected Works of Marx and Engels," Vol 24, p 152) What we should ponder over is that since Marx was so positive about the need for accounting under conditions of collective production, why has accounting not been appreciated or developed in our country, where socialist collective production is already preponderant? Why is accounting so weak, the system of accounting so loose, the accounts so confused, and accounting itself so impractical even among many publicly owned enterprises? The causes may be many, but the most important one is the system of "eating from the same pot."

The fatal error in the system of unified receipts and expenditures, or "eating from the same pot," lies in the separation of rights, responsibilities and interests, and in equalitarianism. In its vertical relations, this system suppresses the initiative of millions of economic entities; in its horizontal relations, it suppresses the enthusiasm of millions upon millions of laboring people. Therefore, whether in practical work or in logical inference, such a system inevitably leads to poor national economic results and seriously hampers the roles played by the superiority of the system of public ownership of the means of production, the elimination of exploitation, and the principle of "to each according to his work"--all provided by socialism.

Marx said: "In all states of society, the labor-time it costs to produce the means of subsistence must necessarily be an object of interest to mankind, though not of equal interest in different states of development." ("Collected Works of Marx and Engels," Vol 23, p 88) The system of "eating from the same pot" certainly reduced the interest of the laboring people in economic results. Thus accounting becomes incapacitated in its function of evaluating economic results, just as people's hands and feet become atrophied, if left unused for a long time. This was how we felt when the system of "paying taxes rather than handing over profits to the state" was experimented with among some enterprises recently. Previously, when the enterprises handed over their profits to the state, the calculations were fairly simple. Later, when they had to pay "several kinds of taxes and fees," the criteria for calculating these taxes and fees were changed, and the different policy decisions caused by such factors as product mix, output, production cost, funds and special loans among the enterprises also brought complex changes in the distribution of benefits among the state, the collectives and the individuals. Thus, not only the leading persons, but also the professional accounting cadres and state taxation personnel found the numerical data too complex to be grasped and so could not make their decisions. Some comrades sighed with emotion: "We have eaten from the same pot for a long time. We have lost our energy, our thinking has become ossified, and our accounts are not clear." If the system of "eating from the same pot" is not completely smashed and if the system of a combination

of economic rights, economic responsibilities and economic benefits is not established, then no matter how often we stress the importance of accounting, it will still be difficult for accounting to play the great role it should, even with advanced accounting methods imported from abroad. All measures to improve accounting will also be futile. "If a carpenter wants to excel in his job, he must first sharpen his tool"--so goes a Chinese proverb. However, if there is no desire to "excel in his job," why should he "sharpen his tool"?

After decades of experience and many bitter lessons, the system of economic responsibility for enterprises has at last made its appearance in socialist China. This system has revitalized accounting, and many gratifying spectacles have emerged in our national economy. However, the system of economic responsibility is making many new demands on accounting. This article will present some exploratory ideas on this question in the hope that the accounting theoretical workers and practical workers will comment on them.

#### 1. Accounting should help the enterprises select the most suitable system of economic responsibility.

There are two links, upper and lower, in the system of economic responsibility for enterprises. The upper link is between the state and the enterprise, and the lower link is between the enterprise and its workshops, work teams and groups, and its individual workers and staff members. These two links are interrelated and have influence on each other.

The system of economic responsibility now can take many different forms. For the enterprise in its relationship to the state, there are such forms as paying taxes instead of handing over profits, responsibility for its own profits and losses, expanded decisionmaking power, retention of a portion of profits, sharing abovequota profits and responsibility for certain profit quotas, state subsidy for losses up to a certain amount, and so forth. Between the enterprise on the one hand and the workshops, work teams and groups and the individual workers and staff members on the other, there are the systems of piecework wages, floating wages, bonuses for abovequota output, special bonuses and reward or punishment. The major categories are subdivided into minor categories. In the case of "paying taxes rather than handing over profits to the state," for example, there are, in addition to income taxes, the tax for regulating differential income, the fees for the possession of circulating funds, and tax on bonuses. Even income taxes are of more than one type. Some are levied at a graduated rate for above average income, and some at a proportionate rate for the whole amount. The diversified nature of other categories in the system of economic responsibility is about the same. This raises a thought-provoking question: Is there any principle or law governing the system of economic responsibility in all these forms? If this question remains unanswered over a long time, there may be three untoward results: First, there may be arbitrary subjectiveness; second, there may be man-made unequal advantages; and third, changes in the forms of economic responsibility may affect the interests already gained by the workers and staff members, resulting in their ideological confusion and the loss of faith in the state among the people.

In recent years, the system of economic responsibility has been popularized very quickly. I will roughly group the methods of popularization under two categories:

First, the "basic method," as I call it. Its special feature is that the enterprises will choose the best form of economic responsibility according to the actual conditions. This form must be approved by the department in charge before being enforced. The result of this method should generally be better. For example, the Fuzhou Sewing Machine Plant was built in 1960 to produce Minjiang brand sewing machines. In 1979, after 20 years of operation, its annual output was only 75,000 items. The products were of good quality, sales were brisk and there was no problem with the supply of raw and semifinished materials. However, there was never any appreciable increase in output. "Eating from the same pot" was the cause of the whole problem, because the workers lacked enthusiasm in production. After conducting investigations and making some calculations, in 1980 the plant introduced the method of "abovequota rewards." The output of the plant in 1979 was used as the base figure, and further output above this figure was to be paid in piecework wages at the rate of 4.5 yuan per item (the average cost of labor was 7.5 yuan per item), and these wages were broken down in such a way that all workshops, work teams and groups, and sequences of operations could share them. As soon as this system of economic responsibility was enforced, the plant's output showed a marked rise, and in 1980, 130,000 sets were produced. The output is expected to be as high as 190,000 sets in 1981. The profits earned increased from 340,000 yuan in 1979 to 1.14 million yuan in 1980, and may be up to 1.8 million yuan in 1981. In 1980, the taxes and profits handed over to the state were increased by 1.15 million yuan; the profits retained by the enterprise increased by 53,000 yuan; and the workers obtained 160,000 yuan more as abovequota bonuses. The same method was continued in 1981, and the plant again had the same "three more." Fuzhou Municipality summed up the experiences of this sewing machine plant and then used it as a "model" which "immediately worked wonders" among almost all plants with similar characteristics. This is an instance of "correct diagnosis and correct prescription which combine to bring about an instant recovery."

Second, the "assignment method," as I call it. Its special feature is that arrangements are made at the higher levels to be followed by the lower levels, although both levels may not know exactly what to do. Sometimes, this method may work, since it requires a sense of responsibility and should be better than "eating from the same pot" after all. However, the result may turn out to be poor. A certain company in Fuzhou set up a system of "responsibility for profit quota which was to remain effective for 2 years." The result was an "unfulfilled responsibility" and the system was abandoned after only 1 year. For some enterprises, the state established different systems of responsibility, but the enterprises never carried them out, and are in fact still "eating from the same pot." Some enterprises even resort to fraudulent means and falsify their accounts in order to obtain rewards.

I am in favor of the "basic method." I believe that if these methods are classified, summed up, improved and perfected, and if we can discover the laws governing them so that the system of economic responsibility can quickly take its final form, even better results can be produced.

The key issue in practicing the system of economic responsibility is to improve economic results. There are many ways to accomplish improvement: first, by increasing output, sales and revenues; second, by reducing the consumption of raw materials and energy, the use of funds, and the product cost; third, by changing the product mix and improving the quality of products; and fourth, by readjusting the orientation of production and organizing integration. Based on these means, accounting can help provide the best form of economic responsibility by adopting the following methods:

- (1) By analyzing the cost price, the quantity and the profits and forecasting the economic results of increased production and sales, accounting can provide the numerical data to show the feasibility of the form of responsibility system mainly related to output.
- (2) By using the method of variable production cost after dividing the entire production cost into fixed production cost and variable production and by forecasting the levels to which both types of production costs can be lowered, accounting can provide the numerical data to show the feasibility of the form of responsibility system mainly related to profits.
- (3) Through analysis of the makeup of profits and forecasting the profits and losses of different varieties of products or of the same product of different qualities, accounting can provide numerical data to show the feasibility of the form of responsibility system mainly related to the value of products.
- (4) By analyzing the changes in the profit rate on funds and forecasting the level of the reserve funds, production funds, the finished products inventory and the effects, accounting can provide the numerical data to show the feasibility of the form of responsibility system mainly related to funds.
- (5) By analyzing the changes in the profit rates on wages, forecasting the rise of productivity and controlling the expenses incurred in the employment of temporary extra laborers and in enlisting outside assistance, accounting can provide numerical data to show the feasibility of the form of responsibility system mainly related to wages and output value.
- (6) By analyzing the economic results of special funds and forecasting the effects of using foreign funds, loans, and the enterprise's own funds for technical renovation and transformation and for tapping potential, accounting can provide numerical data to show the feasibility of the form of responsibility system mainly related to investment.

The system of economic responsibility involving the state and the enterprise can be either the same as, or different from, the system involving

the enterprise and its workshops and work teams and groups. For example, if the state wants the enterprise to "pay taxes instead of handing over profits," the enterprise can also require the workshops to practice the system of profit-sharing, responsibility for certain amounts of profits or losses, or piecework wages for abovequota output. However, suitable readjustments should be made in the plant's financial handling, so that these systems will be in line with the state's unified policy.

2. Responsibility accounting should be popularized to suit the requirements of the system of economic responsibility among the enterprises.

According to traditional financial accounting, the production cost is charged to the products, while the profits or losses are charged to the accounting units. After the adoption of the system of economic responsibility, the principles and procedures of financial accounting should still be upheld, but they should be coordinated with responsibility accounting in the responsible units (including the departments, workshops, workshop sections, work teams and groups, and individuals) and suitable cost centers, profit centers or fund (investment) centers should be set up.

In the past, responsibility accounting and responsibility cost were regarded as imported technology which seemed to be too difficult to grasp. In fact, the responsibility system of "several fixed terms and several guarantees" adopted by the enterprises for their workshops is of the same nature as that of responsibility accounting.

The Fuzhou Match Plant, for example, adopted the "six fixed terms and four guarantees" system of economic responsibility among its workshops. The "six fixed terms" were fixed consumption limits, fixed wage funds, fixed variable expenses, fixed circulating funds, fixed workshop production costs, and fixed contracts of cooperation in production; while the "four guarantees" were guaranteed output (and output value), guaranteed varieties, guaranteed quality and guaranteed profits. They embodied the basic features of responsibility accounting in the following respects: (1) workshops as the responsible units; (2) workshops as a management level with controllable cost centers (the uncontrollable cost centers being at the plant level); (3) workshops as a management level with relative profit centers (price disparity and other special factors to be regulated at the plant level); (4) workshops with fund centers where accounts are kept on the uses and sources of funds (transactions between workshops to be settled at the plant level); and (5) responsibility for checking to determine on rewards or deduction of funds. The workshops also duly set up "five accounts and one checking," meaning a detailed account of low value and easily expendable items; a detailed account of all wages due; a detailed account of basic (or auxiliary) production; a detailed account of their own semifinished products (or finished products); a detailed account of sales profits; and checking on fixed assets. Accounting for each work team and group and for each set of machinery, apart from the workshop, is also a form of responsibility accounting for a certain management level. For example, the wooden accessories workshop has practiced the system of "four fixed terms and three guarantees" among its timber producing teams, the different wooden accessory teams,

the painting teams, the sawing teams, and the cloth-roller repair teams. The "four fixed terms" mean fixed personnel, fixed consumption, fixed expenses for the work teams and groups, and fixed equipment maintenance; and the "three guarantees" mean guaranteed output value; guaranteed quality, and guaranteed varieties. For the work teams and groups, there are fixed quotas, planning and calculations, records, handovers and takeovers, appraisals and rewards or deductions, the only difference from the workshop responsibility accounting being that there is a controllable cost center at the team-group level. For the individual workers and staff members, some simple targets, such as those for output, consumption and expenses, are also set as their economic responsibility, if conditions permit.

There are many advantages in the adoption of responsibility accounting. Despite increased prices of raw and semifinished materials, the Fuzhou Match Plant still expects to increase its output by 4 percent and its profits by 33 percent. The traditional accounting is called "functional accounting," and the keeping of accounts is the financial department's job, with which the workers and staff members are not concerned. After the setting up of "responsibility accounting," however, everyone is concerned with his own personal benefits and becomes eager to work. "Accurate accounts have to be kept for all transactions even between brothers," and nobody can afford to be careless about the handover and takeover between different workshops, work teams and groups or different sequences of operation. They also frequently question and argue about whether the transfer of economic responsibility should be vertical or horizontal. Thus the old practice of "eating from the same pot" was wiped out, and the plant also set up an arbitration group of a representative and authoritative nature. These facts have shown that as long as a firm and strict system of accounting is set up, so that everything is shown in figures, any system of economic responsibility can be reliable and solidly built. The kind of responsibility system described in sensational terms but giving only vague ideas through figures is in fact a form of "eating from the same pot." This is precisely the cause of poor results in the system of economic responsibility in a fairly large number of enterprises.

Of course, the specific substance and requirements of an accounting system should be based on the actual conditions in an enterprise. Since there are differences between manual operation and machinery operation, between the work of individuals and that of production lines, and between assembly and the operation of vessels, ducts and reactors, responsibility accounting should be carried out in a scientific, realistic and satisfactory way with regard to the choice of the department to be held responsible, the scope of the "production cost center," the "profit center" and the "funds (investment center," and the records and books to be kept for accounting purposes. These tasks should neither be perfunctory nor loaded down with trivial details. For example, in a chemical industrial plant, the production of saccharin must go through the continuous process of sodium hydrosulfite treatment, oxidization, polymerization, condensation, chlorination and baking, and many of the operations are carried out in ducts and reactors.

Thus, some norms of responsibility accounting should be fulfilled by the workers, and some by certain sequences of operation (teams and groups). If such norms are arbitrarily imposed on certain teams, groups or individuals, then the goal of responsibility accounting cannot be achieved.

Further study should be carried out on the way to practice responsibility accounting among the functional offices of enterprises. I believe the experience of the assignment of economic targets to different departments of enterprises now practicing all-round economic accounting deserves high marks, because it is providing the foundation for the adoption of responsibility accounting. In my humble opinion, it is more necessary and more urgent that responsibility accounting be practiced in the functional offices than in the workshops, teams and groups or by individuals. At present, the turnover of huge amounts of funds is slow; the quality of products is poor; the consumption of materials is high; and investment returns are unsatisfactory. Apart from the governments at various levels and the relevant departments in charge, the enterprises themselves cannot be absolved of the responsibility for poor management. We cannot afford to be "penny wise" and "pound foolish." Of course, functional offices are different from workshops, because many of their norms are rather vague and abstract, the internal division of work is not clear, and the extent of their responsibility cannot be easily determined. All these factors have brought very serious difficulties to responsibility accounting. That is why the system of economic responsibility among the leading management levels of the majority of enterprises has still not been set up.

Based on my observations of the experiences of all-round economic accounting in some enterprises, I would like to offer the following suggestions on the adoption of responsibility accounting among the functional offices:

(1) Among those departments closely related to the economic norms, such as the planning, production, technology, supply and marketing, financial, labor and capital construction departments, the responsibility system should first be set up with the offices as the responsible party. (2) Different departments should set up their own controllable cost, profit and fund responsibility centers. For example, the planning department sharing the control of output and varieties can set up a "profit center" related to changes in the output and variety norms; the supply and marketing department sharing the control of reserve funds and finished product inventory can set up an "expenditure (cost) center" related to changes in the use of funds; the financial department sharing the control of production costs, funds and total profits, can set up a "cost, profit and fund center"; the capital construction department sharing the control of special production funds can set up an "investment center" for the appraisal of investment returns; and so forth. (3) There should be specific methods of appraisal and criteria for rewarding or deduction. (4) There should be a system for the transfer of economic responsibility. (5) The steps for the enforcement of responsibility accounting should be easy and simple at first, and complex and elaborate later, so that it can be gradually perfected.

In short, responsibility accounting comes under the category of management accounting and has its own unique methods and procedures. It is related to

as well as different from financial accounting. We cannot expect the information provided by responsibility accounting to be exactly the same as that provided by financial accounting. At present, through the extensive adoption of the system of responsibility, we hope to be able to "establish all major sectors in the national economy on the basis of concern for individual interests," as Lerin said.

3. An auditing system should be set up to strengthen accounting supervision and to promote the healthy development of the system of economic responsibility.

The ultimate objective in the practice of the system of economic responsibility is to achieve better economic results and to improve the distribution of economic gains. In this connection, we should pay attention to three points: first, the possibility of failure to obtain the desired result; second, the possibility of "disputes over the gains"; and third, and worst of all, the resort to fraudulent means to squeeze state revenues and to impinge on people's interests. Such instances have been brought to light, and there will be more of them in the future. Therefore, our worry over these possibilities is understandable and by no means a figment of imagination.

Accounting has three basic functions: first, to provide information; second, to exercise control and supervision; and third, to help in policy making decisions. These functions run through the entire process of the movement of funds and the activities of production and business operation. They can play certain regulatory, supervisory and preventive roles in dealing with possible problems in practicing the system of economic responsibility.

There are many factors in the success of the system of economic responsibility in an enterprise. Some of them are mainly objective, but, in any case, it is very important that accounting be used as a means to verify results. Accounting calls for a set of strict methods and procedures. Through the checking of vouchers, determining the classification of transactions, recording the entries, settling the outstanding accounts, and setting up report forms, accounting can systematically, comprehensively and accurately show the results of production and management. However, because of the lack of a solid foundation for accounting in many enterprises, the standard of accounting cannot be high. The lack of a solid foundation is shown by incomplete norms, inaccurate calculations, confused first hand records, and an unscientific approach in cost accounting with "a faithful presentation of false data" as the result. The lack of a healthy development is due to man-made disruptions, departmentalism, the application of pressure and the use of various tricks; the result is a "false presentation of genuine data." To bring into play the supervisory role of accounting in the system of economic responsibility among enterprises, therefore, the first requirement is an accurate record of the transactions, either profitable or unprofitable, without exaggeration or underestimation. Since financial information can play a certain feedback role, the administrators can use such information to revise or readjust their policy decisions so that the system of economic responsibility can produce even better results.

The second requirement is that the economic rules and financial accounting system should be strictly enforced. When economic results are directly related to economic benefits after the adoption of the system of economic responsibility, the enterprises as well as the workers and staff members are naturally very concerned with the distribution of the economic gains. At this time, we must carefully consider the interests of the three parties [the state, the collective and the individual] so as to avoid disputes. At present, there are many channels to the "scramble for profits." If the expenses paid out of the retained profits, after taxes, of the enterprise are included in the production cost, state revenues will be reduced. If capital expenditures are accounted for as operating expenses, state revenues will also be reduced. If "sales commissions," price increases in disguise and other means are flagrantly used for "ill-gotten gains," the masses will have to bear a heavier burden. If an enterprise does not spend its money as it should or fails to sell what should be sold, it may lead to a situation of "dividing all and eating all," without leaving anything for the future. All these irregularities, not to mention the intentional fraud, impinge on matters of policy. Therefore, the accounting personnel should strictly observe a code of ethics. In Yugoslavia, the "Ethical Rules and Regulations for Professional Accountants" has been published, including 16 articles stressing the need for accountants to have a strong sense of responsibility, a scrupulous regard for objective justice, a good professional knowledge, and a spirit of cooperation. This should be a good reference work for us.

(Translation of the "Rules and Regulations" is carried in SHANGHAI ACCOUNTING No 1, 1981) In 1978, the State Council published the "Rules and Regulations Concerning the Duties and Authorities of Accountants," including eight articles defining the duties of accountants. Article 6 reads: "Observe, publicize, and preserve the state's financial system and financial and economic laws, and combat all violations of the law." This is the moral criterion which must be observed by the accounting profession.

Furthermore, a system of auditing should be set up. In common language, auditing means the checking of accounts. I agree with some comrades that an auditing bureau be established under the Ministry of Finance, with corresponding auditing organs at various levels, to be charged with the responsibility for: checking to determine if the vouchers, accounts and reports in various units are all genuine; checking to find out if the various economic activities have been carried out in accordance with state principles and policies; checking on the implementation of economic laws and the financial accounting personnel; and checking on any act of extravagance, waste, graft, embezzlement, or violation of financial and economic laws. For a long time there has been a misunderstanding that since socialist enterprises are publicly owned and all transactions are carried out within the same "household," no conflict of interests can possibly exist. Therefore, auditing was considered unnecessary, and some people even denounced it as a capitalist practice. Many books on "accounting" have been published since the founding of the People's Republic, but there has been very little mention of "auditing." In fact, no serious work has been published on "auditing," and now seems to be the time for the accounting theorists to fill this gap and to restore auditing to its rightful place as an important component of accounting.

Finally, a very important point in strengthening the supervision of accounting is to have an accurate understanding of the meaning of supervision and to correctly handle the dialectical unity of supervision and service. Introduction of the system of economic responsibility has opened an avenue for revitalizing the economy, but past experiences have shown on many occasions that "flexibility" usually brings about "disorder"--and we have witnessed the spectacle of "flexibility immediately followed by disorder--disorder immediately followed by control, control immediately followed by rigidity, and rigidity again followed by flexibility," in a "flexibility-rigidity-flexibility-rigidity" cycle. This spectacle is inseparable from our failure to correctly handle the relationship between supervision and service, from the prevalence of metaphysics in our ideology, and from our proneness to go from one extreme to another. Therefore, when authority is delegated to the lower levels, there should be a clear definition of the scope of authority to be delegated, and the scope of authority should be appropriate. We must serve whatever should be served, supervise whatever should be supervised, and open the front door without forgetting to lock the back door, so that we shall not once again return to the old path. In this way, the system of economic responsibility, as a flower in the restructuring of the economic system, will remain in full bloom forever.

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ENERGY

BRIEFS

RURAL POWER CONSUMPTION INCREASED--Along with the increase of power generation in the countryside following the implementation of the policy of national economic readjustment, power consumption in rural areas throughout the country reached 42 billion kwh in 1981, an increase of 14 percent over 1980. Since the 3d Plenary Session of the 11th Party Central Committee and the introduction of the system of responsibility for production in the countryside, commune- and production brigade-run enterprises have developed rapidly and the consumption in 1979 was 23 percent more than in 1978; in 1980 it was 30 percent more than in 1979; and in 1981 again it was 38 percent more than in 1980. The consumption of electricity by the commune- and production brigade-run enterprises amounted to one-fifth of the total consumption in the countryside. The increase in peasants' income has brought a constant flow of TV sets, electric fans and other household appliances to the rural areas and a fairly large increase in power consumption for illumination and other daily needs in these areas. [Text] [Beijing GUANGMING RIBAO in Chinese 2 Jan 82 p 1] 9411

BEIJING AREA COAL OUTPUT--The Chengzi Coal Mine under the Beijing Mining Administration Bureau fulfilled its annual state production and tunneling plans on 5 December. This is an old mine which has been in operation for more than 30 years. The shortage of coal reserves and the lack of continuity in mining at the different sites have brought difficulties to the task of production. Since the beginning of this year, the mine has tried to raise the extraction rate by tapping potential in the old sites and at the same time stepped up their efforts in tunneling in the faces where the reserve layers were thinning out in the search for new faces. Furthermore, the system of economic responsibility was introduced to arouse the enthusiasm of the workers and staff members in production. The production plan was overfulfilled every month this year, and by 18 September, the tunneling plan for the whole year was fulfilled. On 5 December, the annual production plan was also overfulfilled. Thus the mine achieved a fine record of overfulfilling the state production plan for 15 consecutive years. [By Lu Jingyuan [7773 6641 0337]] [Text] [Beijing BEIJING RIBAO in Chinese 12 Dec 81 p 1] 9411

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## INDUSTRY

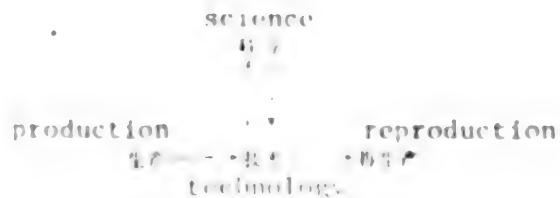
### RELATIONSHIP BETWEEN SCIENCE, TECHNOLOGY, PRODUCTION ANALYZED

Tianjin KEXUEXUE YU: KEXUE JISHU GUANLI [SCIENTIOLOGY AND MANAGEMENT OF SCIENCE AND TECHNOLOGY] in Chinese No 1, 1982 pp 25-27

[Article by Xia Yulong [1115 4416 7893], Liu Ji [0491 0679], Feng Zhijun [7458 0037 0689] and Zhang Nianchun [1728 1819 2797], Shanghai Institute of Scientific Methodology. "A Formula for the Relationship Between Science, Technology and Production"]

[Text] The relationship between science, technology and production was much discussed by Marx and Engels. They wrote that "the origin and development of science is determined from the outset by production" (Engels, "The Dialectics of Nature," 1971 edition, p 162), that "it is dependent to a greater degree on the status and needs of technology, and if society should have technological needs, these can do more to advance science than 10 universities can" ("Complete Works of Marx and Engels," 1972 edition, Vol 39, p 198), that "the productive forces develop continuously in response to the continual progress of science and technology" ("Complete Works of Marx and Engels," Vol 23, p 664), and that "it is self-evident that when large-scale industry combines immense natural forces and natural science in the production process, this must greatly increase labor productivity" (ibid., p 424).

The relationship between modern science, technology and production can be summarized as follows: production is the point of departure and destination of science and technology, science and technology are an important factor promoting the development of production, and technology produces a more direct effect on production than does science; science is a type of knowledge, while production and technology have a material form. Their interrelationships can be summarized in a simple formula involving three directions and five links:



Within the space of a century, science, technology and production have achieved unprecedentedly rapid development. How are we to view this development and change? Some comrades suggest that while in the previous century the formula "production + technology + science" was applicable, today this formula should be reversed to "science + technology + production." Only experience can serve as a standard for evaluating whether this conclusion is true.

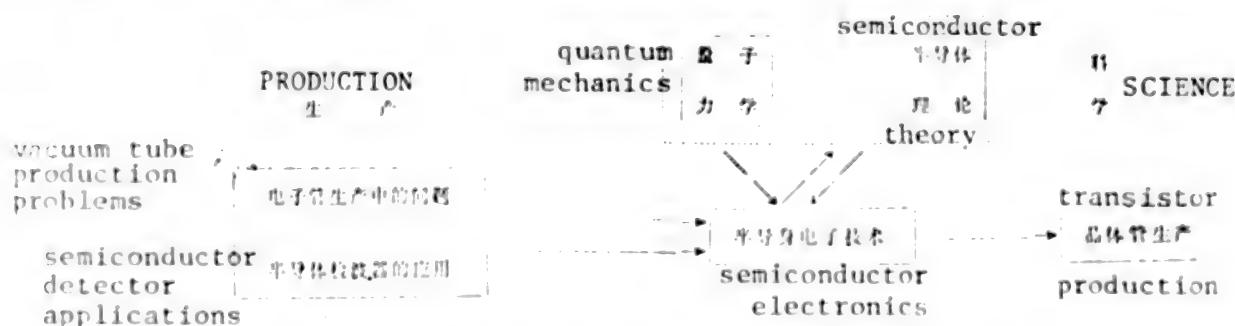
It is true that in actual experience the development of science has, through the intermediacy of technology, been used in production and has greatly promoted the development of production; there are a good many examples of this circumstance, particularly in the new branches of industry. In these terms we can assert the formula "science + technology + production." But ultimately this is only one aspect of the interrelationship between science, technology and production, and is only a fragment of the entire process. The comrades who assert only this three-element formula are fond of citing the example of semiconductors in the modern electronics industry, and accordingly we shall make a careful examination of the historical development of the electronics industry and semiconductor science and technology.

In the 1920's, Heisenberg and Schrodinger investigated quantum mechanics, and in the 1930's their investigations provided a solid foundation for the theoretical understanding of various characteristics of solids. But there was still a considerable gap between theory and practice. The Bell Laboratories in the United States felt strongly that a major research effort should be made to bridge the gap.

For example, Kelly, a vacuum tube expert and the head of laboratory K, was well aware that since vacuum tubes had too short a lifetime, consumed too much power, gave off too much heat and took up too much space, they could not meet the steadily growing needs of communications. Semiconductors had already been used as detectors, and many scientists had begun to wonder since semiconductors had one of the properties of vacuum tubes, namely that of detection, whether or not they could also be used to amplify weak electrical signals. But at the time, no one knew how to solve the problem, even while people knew theoretically that electric current in semiconductors could be controlled. Kelly and many researchers at Bell Laboratories discussed this problem repeatedly. Shockley was then conducting research on semiconductors, and in January 1946 he set up a special solid state physics research group whose principal members also included Brattain and Bardeen. Initially they studied the nature of pieces of silicon and germanium and their surfaces. Shockley suggested applying a transverse electric field to a semiconductor film in order to control the current (i.e. field effect amplification), but in the initial experiments no control effect was observed. Brattain and Bardeen tried to observe the control effect on the surface of germanium, and during the observation process they discovered a new method of controlling the conductivity of semiconductors by applying an electric current at a suitable contact. The development of this method produced in 1947 the earliest transistors. Afterward, as semiconductor technology developed, Shockley's suggestion that the field effect method be used also bore fruit.

For a time after the discovery of the transistor, they concentrated their efforts on semiconductor devices and basic semiconductor research. As semiconductor theory was improved and developed, quantitative agreement between theory and practice was achieved with respect to many characteristics of semiconductors, after which theoretical understanding became more profound, ultimately resulting in the establishment of semiconductor theory. During research into semiconductor theory and practical applications, the new field of semiconductor electronics technology was developed. Every year or two, semiconductor technology made new breakthroughs, so that a new prospect unfolded before people's eyes.

This makes it clear that semiconductor technology did not merely originate from scientific theory, but instead began first from the integration of production experience and problems regarding electronic tubes and semiconductor detectors. Discoveries regarding the effect which the purity of semiconductors has on their characteristics were made during the course of prolonged experience with the production and utilization of semiconductor detectors, which stimulated scientists to attach importance to the study of the effect which changes in semiconductor purity had on their characteristics. It is important to note that, as Bardeen had pointed out quite clearly, basic research in semiconductors began only after the investigation of the transistor, while semiconductor theory was developed and completed in parallel with the development of semiconductor technology. This makes it clear that the simple formula "science → technology → production" is incomplete; the situation should be expressed with a three-direction, five-element, two-layer formula, as in the figure:



As the figure shows, the questions on the role of quantum mechanics do not indicate that science has the leading role, how vacuum tubes were invented, how semiconductors and transistors themselves were discovered, and whether science really did not influence these processes, they ultimately reduce to a "chicken-and-egg" situation. If we work backward in this way, we will reach the discovery of electronics, which is implicit in the "Edison effect." During Edison's entire life of basic research, only this discovery was directly associated with production technology. After inventing the light bulb, he devoted a prolonged effort to extending the lifetime of the incandescent bulb. In one experiment he accidentally discovered that electric current could pass through a vacuum, recorded the fact and obtained a patent on it. Thus he began electronics.

In 1979, Lailshan [phonetic], chairman of the Department of Physical Engineering at the University of Glasgow, pointed out at the annual meeting of the British Association for the Advancement of Science that generally speaking, there are many situations in which technology gives rise to science, while there are only a few cases in which science gives rise to technology.

Currently some comrades are advocating another formula regarding the relationship between science, technology and production, namely "production + reproduction." Although this viewpoint is not a systematic one, it is a long-standing one and has had great influence. It originated in the narrowness and conservatism of small production. Small producers are shortsighted and act on the basis of old experience; they do not understand or admit the great importance of science and technology in modern large-scale production, but are satisfied to rely on individual production skills to carry out simple reproduction while they treat science and technology as an alien force. Because old China was a country in which the small peasant economy was dominant and which had undergone 2,000 years of the influence of feudal tradition, this viewpoint has a deep-seated social basis. If this viewpoint were used to guide production, it would result in exclusive emphasis on adding to equipment and the labor force and increasing the number of shifts and workplaces, with an all-out stress on expenditures and on shock programs, while ignoring or even rejecting the effect of science and technology. Another of the small producers' characteristics is a negation of the relative independence of science and technology. They shallowly explain away the correct proposition that science and technology serve economic construction by asserting that ad hoc transactions are involved. If someone does not wish to serve production, the market or daily life will produce problems or requirements today which he will be well advised to solve tomorrow, and if results are not achieved within a certain length of time this will prove that science and technology are useless. If someone wants to carry out laboratory research he is immediately branded as "divorced from the reality of production." Under these circumstances such people not only reject basic research, but also eliminate practical research: this is an unhealthy tendency which has held sway in our science and technology for 30 years. The effect of this attitude on both theory and practice has not yet been fully eliminated. A lack of scientific attainments by our management personnel constitutes a latent market for this viewpoint, and the management system which we apply in the enterprises, in which the financial organizations control all receipts and disbursements and the purchase and sale of products is centrally controlled, deprives the enterprises of any internal incentive for renovating technology and modernizing their production, which inevitably gives aid and comfort to this viewpoint. Accordingly, in order to develop science and technology and fully utilize their role in economic construction, we must eliminate the influence of this viewpoint in the guiding ideology and suitably reform economic and management systems which hinder technical progress.

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CSO: 4013/20

INDUSTRY

ZHEJIANG MACHINE BUILDING INDUSTRY READJUSTMENT DESCRIBED

Beijing JINGJI GUANLI in Chinese No 12, 15 Dec 81 pp 16-18, 27

[Article by Sun Liegen [1327 3525 2703]: "Zhejiang Province Expands the Scope of Service for Machine Building Industry with Great Success"]

[Text] During the national economic readjustment, the machine building sector in Zhejiang Province has expanded the scope of its service, readjusted its product mix and changed its service orientation from heavy industry and capital construction to agriculture, light industry, people's daily necessities and exports, with gratifying results. In 1979, the total industrial output value and the profits realized exceeded those in 1978 by 19.25 percent and 20.37 percent respectively. In 1980, the total industrial output value again increased by 10.79 percent over that of 1979 and the profit quota was overfulfilled by 32 percent, exceeding that of 1979 by more than 17 percent, if certain noncomparable factors are excluded. Among all the industrial departments throughout the country under the First Ministry of Machine Building, its production rose from 17th to 12th place, and its production of instruments and meters rose to 7th place. Despite the serious shortage of state planned tasks and of raw materials and fuel, the production here has been quite successful.

Because of the long disruption by the "leftist" ideology, the machine building industry in Zhejiang, as in the whole country, stressed the production of the means of production and neglected the production of consumer goods; it paid attention only to domestic needs without giving any thought to exports. The scope of its service was narrow, and the product mix was very irrational. Of the 60 main types of machinery products, 43 were intended for infrastructural industry, with very little left for light industry, for the market and for export. Because of the policy of national economic readjustment, a great change has occurred in the guiding ideology, service orientation and business style, and instead of being confined to heavy industry, the machine building industry has expanded its scope of service, readjusted its service orientation and opened more avenues for the supply of mechanical and electrical appliances to meet social needs. Thus production has been stimulated, and the product mix of the industry has become more rational and proportionate. The main features of the expansion of its activities are as follows:

## 1. Increased Production of Mechanical and Electrical Appliances for Daily Use

The majority of machine building enterprises in Zhejiang are of small and medium size. Since "small boats are more maneuverable," these enterprises have taken full advantage of this characteristic to promptly change their service orientation, and are producing a large number of mechanical and electrical appliances needed in people's daily life. In addition to large increases in the production of electric meters, water meters, electric fans, cameras, and air conditioners, there has also been success in the trial production of various types of electric irons, phonographs, household refrigerators, floor-type radios, pocket electronic calculators, household noodle-making machines, small household ovens, popsicle-making machines, ice-cream machines and other durable consumer goods needed by the urban and rural population in recent years. The Yuhang Refrigeration Plant was originally engaged in repairing diesel engine parts and had operated at a loss for a long time because of insufficient production tasks. Then it learned that many localities in the country had problems with refrigeration facilities for storage and transportation, causing the spoilage of large quantities of melons and fruits and losses to the state. So it concentrated its efforts on changing over to the production of small refrigerators, and soon succeeded in trial producing and supplying them to the market. The sales soon improved, with remarkable economic results, and the label of "bad investment" was removed in the same year. Its profits last year were three times those of 1979; from January to September this year, the profits were nearly double those of the same period last year. The vertical and desk-type electric fans produced by the mechanical and electrical appliances plants in Jiangshan and Tongxiang Counties have superior features of low power consumption, strong blowing power, slow heating and high use value. Compared with the same type of electric fans produced at home, their power consumption is approximately 25 percent less. They are highly regarded by the leadership and the scientific research departments, and have received favorable comments from the users. The Hangzhou Photographic Materials Plant has produced Lihe brand enlargers of high quality and low price. These enlargers are well received by amateur camera fans. In the first three-quarters of this year, it has already produced 14,000 sets of them, nearly three times more than last year.

To further increase the mechanical and electrical appliances of daily use for the market, efforts have been made to take full advantage of the resources of the existing enterprises. The Ningbo brand small household water meters produced by the Ningbo Water Meter Plant are selling well at home and abroad. To increase their production, three collective enterprises, operating very much under capacity, were merged with the water meter plant, and the output of water meters doubled for 2 consecutive years. Last year, some 268,000 water meters were produced, or more than the sum total of output in the 3 preceding years, and the profits earned exceeded the total value of fixed assets of the plant. This year, its output is expected to reach 500,000 units. If the production of these household water meters had been increased through the method of expanding capital construction, the cost of the

buildings alone would have amounted to more than 1 million yuan, and the project would have taken 2-3 years. Now, through integration, reorganization and technical transformation, the output of water meters, electric meters and other high-quality mechanical and electrical products which are selling well on the market has doubled, and some of these items even dominate the home market. Many machine building enterprises have also actively developed the production of key parts and accessories requiring similar production technology for the light industry. At present, they are producing for the light industry miniature motors, small ball bearings, calculators, timers, regulators, agate-bearings, various types of magnetic steel, bicycle pipes and so forth, and are playing a positive role in increasing the supply of daily consumer goods.

## 2. Concentration of Forces Supporting Technical Transformation in Light and Textile Industries

The machine building industrial sector in Zhejiang Province considers its service to technical transformation in the light and textile industries as an important aspect of the expansion of its activities. The provincial, prefectural and municipal departments in charge and the enterprise leaders have conducted in-depth investigations among the light industry, silk industry, textile industry, food industry, chemical industry and other trades serving daily needs, then they have undertaken the task of producing some item of special equipment urgently needed by these industries and trades, with particular attention to the improvement of quality and the lowering of production costs. According to statistics obtained as a result of such investigations in 79 enterprises, since last year 170 new types of products have been trial produced and put in regular production, while another 230 types, including woolen textile machines, food machines, building machines, brewing equipment, pharmaceutical equipment and complete sets of bicycle equipment, are still in trial production. This will help improve the quality of products in these industries, reduce their consumption of raw materials and energy, minimize pollution, and expand their productive capacity. Because of the reduced scale of capital construction this year, the Hangzhou Turbine Plant has had cancellation of orders for its products totaling more than 10 million yuan. Under such conditions, the plant took the initiative of investigating the light and textile industries, and learned that although these industries are fairly well developed in Zhejiang and Jiangsu, known as the "native land of silk," the technical equipment of the light textile industrial enterprises is backward and in urgent need of renovation. With great concern for these enterprises, the plant successfully trial produced a type of high-temperature, high-pressure automatic dye jigger, which was urgently needed for the printing and dyeing of chemical fibers. This production was hailed as "timely rain." Now, scores of customers in the province have placed orders for these dye jiggers, while other provinces, including Jiangsu, Guangdong and Fujian, have also sent their agents here for the same purpose. Recently, the plant also successfully trial produced another dyeing machine of the over flowing type, and decided to produce printing and dyeing machinery products as its principal means of expanding its service. Filter-tip cigarettes are rather scarce in the

country. Along with the rise in people's standard of living, the demand for high- and medium-grade filter-tip cigarettes has also continued to increase. To accelerate the production of these cigarettes, the Linhai Machine Building Plant of Zhejiang, with the support of the light industry departments, successfully trial produced a forming machine for making filter-tip cigarettes. It is practically an electric-controlled automatic production line performing many different functions, including loosening, glueing, forming, cementation, baking, cutting, and conveying. In the past, the forming machine for this had to be imported from abroad and it cost a great deal of foreign exchange. Now it can be domestically produced at a cost about half the price of similar foreign-made products. It is highly efficient, and 1 year's operation by the customer can yield a profit of nearly 1 million yuan. At the same time, it has solved the problem of operating under capacity.

Along with the increase in products serving the light and textile industries and the market, the product mix of the machine building trade in Zhejiang has also undergone a gratifying change. The proportion of products serving the light and textile industries and the market has been markedly increased. In the past, the output value of these products was less than 10 percent of the total industrial output value; now it has increased to approximately 20 percent.

### 3. Efforts To Serve the Exploitation and Conservation of Energy

Among the machinery products being used by various trades and undertakings, there are many "coal tigers," "electricity tigers," "petroleum tigers" and "gas tigers." Many trades are unable to make full use of the residual heat and discarded heat in the process of production, and a lot can be done in tapping the potential of energy conservation. The machine building trade in Zhejiang Province has a fairly strong technical force for energy conservation and for the utilization of residual heat. Bringing into play this strong point, it has directed its main efforts to the trial and regular production of energy-conservation equipment. It has already supplied miniature energy-saving turbines, various types of residual heat boilers, automatic coal burning industrial equipment, low consumption transformers, and other energy conservation products totaling more than 20 different types. The Hangzhou Boiler Plant is one of the backbone enterprises producing residual heat boilers. Based on the sources and characteristics of residual heat in various trades, it designed more than 20 different types of such boilers, including those for ethylene, sulphuric acid, open hearth, glass, heating oven and carbon black, and its help to the plants concerned in making use of the residual heat has shown remarkable results. Formerly, a phosphate fertilizer plant in Nanjing wasted a lot of residual heat in production. After installing a 120,000-ton sulphuric acid residual heat boiler produced by the Hangzhou Boiler Plant, the residual heat has been utilized to generate 4,000 kW per hour, enabling the plant to save nearly 10,000 yuan on its electricity cost. To supply more equipment for the comprehensive utilization of residual heat by various trades and undertakings, five machine building plants in Hangzhou have formed, on the basis of voluntary cooperation for mutual benefit, the Hangzhou Heat Energy Power Company,

which not only produces and supplies complete sets of energy-conservation technical equipment, but also carries out on-the-spot designs and undertakes the job of installation and adjustment of the equipment in practical use as well as providing technical training. The Tongxiang Chemical Fertilizer Plant of Zhejiang has used a 750 kW turbine of the back-pressure type in tandem with a generator for the use of residual heat, and is now able to use the discarded heat from production a second time. The average amount of electricity generated by this means is some 400,000 kWh, and its coal consumption for each ton of synthetic ammonia has dropped below 500 kilograms. It is now a standardbearer in energy conservation among all small chemical fertilizer plants.

#### 4. Active Exploitation of the International Market by Increasing the Export of Mechanical and Electrical Products

While consolidating and developing their domestic market, the machine building trade in Zhejiang Province has also taken active measures for a number of brand name products of fine quality and rich local flavor to enter the international market. It has adopted various flexible forms under the existing system of foreign trade: (1) exporting its own products and serving as agents for fraternal provinces and municipalities in export; (2) direct export by the producing enterprises; (3) processing for foreign customers; (4) cooperative production; (5) exporting production technology; and (6) exporting products on credit granted by the sellers. Further efforts are being made to expand exports through neutral packing and using designated brands.

To continue the exploitation of foreign markets, these machine building plants have studied the new demands on the international market through various channels and have paid great attention to the lifestyles and production customs of prospective customers as well as the climatic environments abroad in order to fit in their production plans accordingly. For example, the climate in the Philippines is rather humid; under such conditions, the insulated part of generators can easily be damaged by the humidity. The Hangzhou Generating Equipment Plant specially organized its forces to study this problem and to improve the designs so as to make its products more humidity-proof. The Philippine customers are quite satisfied with their purchases. Recently, the plant signed a contract for the supply of a complete set of small hydropower equipment. In trying to popularize the use of forklifts, the Hangzhou Forklift Plant, based on the requirements of foreign customers, has successfully trial produced eight different accessories for its products, including parallel rods, lifting arms, rotary brackets, forward-thrust forks and tilting forks. The user can select the correct accessories for various uses. This year, the number of contracts signed with foreign customers for the purchase of these forklifts is more than five times that of last year, and its export of forklifts amounted to 90 percent of the total national export of forklifts.

Because the products are meeting international market requirements, export business is now continuing to improve. Last year, the total export value surpassed that of 1979 by 30 percent; this year, up to the end of August,

the number of foreign trade contracts signed is already more than the whole of last year by 60 percent. There are now more than 80 enterprises doing export business, and the areas covered have expanded from Hong Kong, Macao, and Southeast Asia to America, France, West Germany and other developed capitalist countries. At present, more than 60 countries and regions in the five continents of the world are using mechanical and electrical instruments and other products of Zhejiang.

#### 5. Better Service to Customers by Increasing the Supply of Spare Parts and Accessories

In the past, service to customers did not receive sufficient attention, and many damaged machines could not be repaired. Sometimes, there were not enough spare parts or accessories, and the result was a long "work stoppage." Some customers said: "These machines are like babies born by their mothers but having no parents to bring them up. When they become ill, they cannot get any medical treatment." In the course of readjustment, many machine building enterprises have set right their production goals, and now consider customer satisfaction as their business orientation. They are making great efforts to increase the production of spare parts and accessories in order to offer better maintenance and other technical services to the customers. The porcelain trade had frequent problems with some spare parts for their vacuum pumps because of the large dust and vapor content. Since the beginning of this year, the Vacuum Equipment Plant of Zhejiang has increased the production of spare parts and accessories and has attached great importance to customer service, even to the point of teaching their customers some maintenance techniques. According to the customers' requests, the plant has designed some equipment for dust and vapor treatment as an accessory service for the vacuum pumps sold, and this accessory service gives great satisfaction to the customers. A customer in Jingdezhen, Jiangxi, ordered 65 sets of vacuum pumps, and other porcelain factories soon followed suit. There is now a brisk sale of these vacuum pumps.

In developing its service, the machine building trade in Zhejiang is now directing its efforts to improving its relations with its old customers as well as to winning new ones in the light industry and the countryside. The Hangzhou Oxygen-Manufacturing Plant at one time found the sales of its large oxygen-making machines sluggish. Instead of acting like a large plant which only waits for the calls of customers at the door, the plant organized its leading cadres, engineers and technicians to visit more than 10 provinces and municipalities to see how the machines they had sold were operating, and took the initiative of supplying various spare parts. If the customers needed them, they would gladly supply spare parts in any quantity regardless of the tasks involved. The customers said: In the past, people made long trips to the Hangzhou Oxygen-Manufacturing Plant, "arriving with high hopes but returning in despair." Now people are "going because of its good name and returning fully loaded." The plant also supplies certain high-level equipment for the light industry. Because of its attention to both new and old customers, the scope of its service has been greatly expanded, and its production has continued to increase. Both its output and profits are maintained

at high levels. After changing its business style, the Shaoxing Mining Machinery Plant organized service teams to visit 17 provinces and municipalities, including Yunnan, Xinjiang and Nei Monggol, to repair some easily damaged parts of the small cracking machines and ball mills sold by this plant. As a result, some machines, which had been left idle, were again back in operation. Their service was greatly appreciated by the customers. At the same time, this gave the plant a new life, because at that time, the production of mining machinery products was generally on the decline. From January to September this year, its total industrial output value and profits increased by 7 percent and 9 percent respectively, compared with the same period last year. The profit plan for the whole year was overfulfilled by 10 percent and 3 months ahead of schedule.

At present, the broad masses of workers and staff members in the machine building sector in Zhejiang are conscientiously studying and implementing the series of important directives from the Party Central Committee and the State Council, plucking up their revolutionary courage, and continuing to expand their scope of service, to readjust the product mix, and to further exploit the markets at home and abroad in an effort to promote production and to blaze a new trail for the development of the machine building industry next year.

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## INDUSTRY

### BRIEFS

'SHAANXI' PROMOTES TECHNICAL INNOVATION--The SHAANXI provincial industrial and communications system has seriously implemented the principle that it is essential first to tap potential of old factories and later to build new factories. The system has therefore tapped potential and carried out technical innovation and modification in old enterprises. Over the last 3 years, the system has spent 531.55 million yuan on tapping potential and has carried out technical innovation and modification. This sum is basically equal to the total amount spent on capital construction in localities in the same period. About 76 percent of this sum has been spent on increasing production, improving quality and increasing variety of products, about 5 percent on energy conservation and reducing consumption of raw materials, about 3 percent on labor safety and environmental protection and 16 percent on other items. Since tapping potential and carrying out technical innovation and modification, the system has increased its output value by 690 million yuan and its profits and taxes by 162 million yuan a year. Over the last 3 years, the system has produced an extra 500,000 watches, 250,000 sewing machines, 300,000 bicycles, 60,000 TV sets, 100,000 cases of cigarettes and 54,000 tons of chemical fertilizers. [HK190949 Xian SHAANXI Provincial Service in Mandarin 1130 GMT 10 Feb 82]

CSO: 4013/47

## **DOMESTIC TRADE**

### **METHODS FOR IMPROVING COMMODITY CIRCULATION PROPOSED**

Beijing JINGJI GUANLI in Chinese No 12, 15 Dec 81 pp 33-36, 11

[Article by Gao Dichen [7559 3321 7115], Tai Pei [7118 3836] and Du Yu [2629 4416]: "Clear the Channels of Circulation To Promote Production"]

[Text] During the national economic readjustment in the past 2 years, there has been fairly rapid development in the production of consumer goods and a fairly large increase in retail sales in the Jiangsu-Zhejiang region. In 1980, the total value of retail sales in Jiangsu Province was 20.1 percent, and that in Zhejiang Province was 24 percent above those in 1979. The problems of supply and demand has been alleviated, and the market as a whole is now brisk and becoming increasingly stable.

According to investigations, the departments concerned in these two provinces have adopted a series of general and specific policies to promote the production and exchange of commodities in the course of readjustment and restructuring. The policy of using many different economic sectors, channels of circulation, and forms of procurement and marketing has helped enliven the market and clear the channels of circulation. The policy is mainly manifested as follows:

1. The existence of many different economic sectors in the market. In 1980, business conditions in cities with different economic sectors at or above the county level were as follows:

<u>Economic Features of Enterprises</u>	<u>Number of Enterprises</u>	<u>Number of Personnel</u>
(1) State-run commerce	3,377	136,664 (administrators included)
(2) Collective commerce under state-run enterprises	5,992	77,606
(3) Commerce run by enterprises owned by the whole people	563	2,994
(4) Commerce run by other departments	2,877	24,510

(5) Industrial retail departments	377	2,387
Including:		
Collectively owned industry	283	1,681
(6) Individual peddlers	14,386	16,140

In the past 2 years, changes in the composition of the total value of retail sales in Zhejiang as shared by different economic sectors are shown as follows:

	1978 (%)	1980 (%)
Total	100	100
State-run commerce	39.2	35.5
Supply and marketing commerce	39.7	37.3
Collective commerce	9.4	12.4
State-run food service	3.2	3.2
Sold by industry itself	5.8	8.6
Individual commerce	0.2	0.4
Others	2.5	2.6

Because of the existence of different economic sectors on the market in the past 2 years, the number of commercial network outlets has been increased by nearly one-third, and there are now in addition more than 10,000 itinerant peddlers. Although the proportion of state-run commerce in the total value of retail sales has declined, the absolute value of retail sales has increased by a wide margin. In 1980, the net profit earned by state-run commerce was 18.89 million yuan, a 71.7-percent increase over 1979.

2. Change in the forms of procurement and marketing for industrial consumer goods. In the past 2 years, the two provinces--Jiangsu and Zhejiang--readjusted some forms of procurement and marketing for industrial consumer goods by reducing the scope of planned commodities and initially changed the methods of "unified distribution" and "state monopoly for the marketing of products of private enterprises." According to statistics, since last year, the proportion of "planned procurement" of products of the first and second categories to the total procurement of industrial products dropped by more than 10 percent. In Jiangsu Province, the departments under the Changzhou Commercial Bureau procured 15 types of industrial products of the first and second categories in 1981, a reduction of 68 percent below 1979 when 47 types were procured.

Besides the changes in the forms of procurement and marketing of industrial goods by the commercial departments, the following new forms of commodity procurement and marketing and business methods can be seen in the process of circulation of goods after leaving the production enterprises in the Jiangsu-Zhejiang region during the past 2 years.

(1) Sales by industry itself: The products sold by industry itself are mainly of two types: First, the products sold by the retail departments set up by the industrial departments in charge, mainly wholesale, with retail sales as a supplement; and second, the products sold by the production enterprises themselves, either wholesale or retail sales. There are now many varieties of products sold by the industry itself, including cotton cloth for unified purchasing and marketing; sewing machines, wrist watches and bicycles for planned procurement; and other commodities for ordering and selective purchases.

(2) Joint industrial and commercial undertakings: In June 1980, the textile industry bureau and the commercial bureau of Changzhou Municipality formed the "Changzhou Municipal Joint Retail Department for Trial Sales of New Textile Products," a collective enterprise with independent cost accounting and responsibility for profits and losses. Both industry and commerce contributed equal shares of personnel and funds, but the sharing of profits is based on the ratio of 70 percent for industry to 30 percent for commerce. The products were transferred directly from the plants to the retail departments, with the settlement of accounts carried out at the second level commercial center at wholesale prices. In the past year, the retail departments sold 52 types of new products of 64 new designs on a trial basis. The sales totaled 3.7 million yuan, including a net profit of more than 400,000 yuan.

(3) Wholesale selling by collective enterprises: Changzhou Municipality has opened a collective wholesale commercial enterprise called the "Changzhou Municipal Special Store for Minor Commodities," mainly dealing in industrial products in daily use which are in short supply on the market, in addition to wholesale selling of commodities of the second category that are not included in state planning. At the same time, a retail store was set up as a supplementary undertaking selling more than 1,400 types of commodities. This collective enterprise, engaging in both wholesale and retail sales, was willing to sell at wholesale prices even in small lots, to break up wholesale lots for retail sales, to deliver wholesale goods immediately even to the customers' door, and to pay for incidental damage. It has played a useful role in evening up the business among various retail stores. Since its opening, this enterprise has sold more than 30,000 yuan worth of overstocked goods for other retail enterprises. This enterprise uses its own sources of procurement aside from the local second-level wholesale centers for sundry goods. Based on market needs, it can place orders with the commune- and production brigade-run enterprises in nearby rural areas for the goods to be supplied or to be processed. Sometimes, it even procures goods from other counties within or outside the province. At the same time, it serves as sales agent for these commune- or production brigade-run enterprises, or as purchasing agent for some foreign trade organizations.

(4) Trust business: There are now in Zhejiang 45 trade trust companies, mainly dealing in wholesale selling and in the procurement of commodities from various localities within or outside the province, with a view to adjusting the surplus and shortage. Trust, as a form of business, is more sensitive to market conditions and more flexible. Thus it plays a useful role in clearing the channels of circulation between different areas.

including cities and the countryside, and in evening up surpluses and shortages. When commodity prices have been frozen, business activities of this type have also been reduced.

(5) Exchange of industrial goods for agricultural sideline products by individual peddlers: People in the bordering rural areas between Jiangxi and Zhejiang from time immemorial were accustomed to the use of Zhejiang products. These products were always supplied through individual itinerant peddlers. This form of procurement and marketing was extensively used in supplying industrial products to the countryside or the remote mountainous areas. During the three major transformations, particularly during the late 1960's, this channel was blocked because of the abolition of individual peddling. It has been reactivated in recent years, and has helped promote the circulation of materials between urban and rural areas.

In addition, the expansion of state-run commercial retail stores and the basic-level supply and marketing cooperatives and of the scope of independent procurement by collectively owned commerce have also played an important role in promoting commodity circulation between different areas, including urban and rural areas. In 1979, the commodities independently procured by the retail stores affiliated with the Hangzhou Municipal Department Store amounted to approximately 20 percent of the total procurement by the department store. In 1980, they rose to more than 30 percent. The cooperative stores (groups) in Hangzhou Municipality formerly procured less than 40 percent of their goods from outside sources; now goods from these sources generally represent more than 60 percent. The procurement of goods by retail stores direct from the production enterprises or the second-level centers not only reduces the intermediate links and saves time and money in circulation, but also helps enliven the market. By directly reflecting the consumption requirements, this method of procurement also helps increase the production of easily marketable goods.

The experiences of market activities in the Jiangsu-Zhejiang region have shown that readjustment of the economic structure, and increased production of consumer goods and other easily marketable goods are the material base for enlivening the market. Increasing the forms of commodity procurement and marketing and business methods not only creates the conditions for the existence of various economic sectors on the market, but also meets the objective requirements for clearing the channels of circulation. Changing the forms of procurement and marketing for industrial consumer goods and developing or clearing the channels of circulation are tantamount to opening more avenues and more "sluicegates" for the commodities to "flow" into the "sea of consumption." There must be an economic structure easily adaptable to consumption requirements, an active and sensitive market, and a network of channels for smooth circulation before our socialist commodity economy can be vigorously developed and revitalized.

Despite the growing market in the Jiangsu-Zhejiang region in the past 2 years, there is still a serious discrepancy between the availability of commodities on the market and the people's purchasing power, a serious imbalance between supply and demand. At the same time, there are certain

elements obstructing commodity circulation and the rapid increase of goods in demand. Therefore, it is still a very important task to further clear the circulation channels and to increase the production of industrial consumer goods.

Based on the market conditions in Jiangsu and Zhejiang, the following problems should be carefully studied and properly solved if we want to further clear the circulation channels.

1. Further reduce the control of commodities of the first and second categories and improve the forms of procurement and marketing for industrial consumer goods. In the past 2 years, although the proportion of unified procurement and planned procurement by the state of commodities of the first and second categories has declined, investigations have shown that such procurements in Zhejiang in 1980 still accounted for more than 60 percent of the total procurements in the province. The commodities procured in these forms included those subjected to unified purchasing and unified marketing, and unified purchasing and unified distribution, as well as planned commodities controlled by the Ministry of Commerce, the Ministry of Light Industry, and the provincial government, such as TV sets and refrigerators among the major items, and shoe nails among the minor items. All these are known as "planned commodities" (some of them belong to the third category in name, although they are in fact controlled with the methods intended for second category commodities). Under the existing planning system, it is difficult for the market to be revitalized with so many "planned commodities." Practice has shown that the more and the longer commodities are subjected to unified procurement and "planned distribution," the more ignorant will the production enterprises be of the market needs and the conditions of consumption. This has been an important reason for the continued production of unwanted goods even when there is already overstocking. Therefore, there should be suitable readjustment in the forms of procurement and marketing for industrial products (divided into four categories for control)--forms which were developed in the 1950's and which still exist. As long as there are no adverse effects on supplies to the market, the proportion of commodities of the first and second categories should be reduced. For example, chemical fiber products, like cotton material, are required in large quantities for people's clothing. Under present market conditions, however, the question of whether or not they should be exempted from unified purchasing and unified marketing deserves careful consideration. At present, some chemical fiber products, such as Terlenka [dika 3321 0595] and Banxianka [0584 4848 0595] and the dark-color chemical fiber materials are not selling well, although the supply of printed polyester cotton fabrics and knitted polyester cannot catch up with the growing demand. One reason for the poor sales is that these products do not meet market needs, and another reason is that the prices are too high (since the profit rates are high at all links of production, beginning with the import of raw materials). Therefore, they cannot be easily sold in the rural market. If this situation were to continue indefinitely, it would mean the elimination of part of the chemical fiber products before these products can gain a foothold in the rural market. That is why we hold that instead of unified purchasing and unified marketing,

we should use the method of selective purchase for chemical fiber products. We also hold that the purchasing and marketing plans should be carried out in the form of signed contracts between industry and commerce, and that whatever the commercial departments do not select can be sold by the industrial departments themselves. By this means, we can help reduce the production costs of chemical fiber products, lower the selling prices, increase the designs and varieties, and upgrade the products. More chemical fiber products of good quality and low prices will then be able to find their way into the market.

2. Develop more flexible forms of purchasing and marketing, as well as business methods for minor commodities. The so-called minor commodities in fact include most sundry goods aside from those of the first and second categories. These minor products amount to approximately 30 percent of the industrial consumer goods in circulation. These commodities have certain special characteristics, such as unsteady demand, variable consumption and quick changes in marketability. In production, they need only simple technology and can be easily imitated and produced in small lots. Therefore, they are on the one hand suitable for collectively owned enterprises and small factories which can easily change their line of production, while on the other hand, their production can easily become overlapping, and their output can rise and fall in a haphazard way. For their circulation, therefore, we should use more diversified and flexible business methods instead of that of "major control over minor commodities."

To increase the production of sundry goods, to bring prosperity to the market, and to enrich our lives, we should further improve the forms of purchasing and marketing and the business methods for minor commodities in accordance with their characteristics in production as follows:

- (1) Abolish the "major control over minor commodity" system, change the disguised "planned control" method, popularize the method of selective purchasing, and strengthen the planned circulation on the basis of purchasing and marketing contracts between industry and commerce.
- (2) Set up special organs for dealing in minor commodities in their own producing areas so as to improve the business methods for this type of commodities, to prevent the elbowing out of minor commodities by major commodities, and to help increase the designs, varieties and sales of minor commodities.
- (3) Increase the wholesale channels to promote the circulation of minor commodities. Although minor commodities do not have much impact on the national economy or on people's livelihood, their role in enlivening the market, in enriching people's lives, in facilitating consumption and the withdrawal of currency from circulation, and in adjusting the relations of supply and demand cannot be ignored. Furthermore, the production of minor commodities calls for high labor intensity and thus can absorb more labor power. Therefore, minor commodities should have a promising future. To further promote the production of minor commodities, we should greatly

increase their channels of circulation. First, the special state-run retail stores for minor commodities can undertake both wholesale and retail sales. This will not only increase the channels of circulation for minor commodities, but also make up for the scarcity of profits for the enterprises retailing minor commodities and thus help arouse their business enthusiasm. Second, collectively owned commerce dealing in minor commodities should be permitted to undertake wholesale selling, provided conditions permit, so that they can help fill some gaps left by the state-run wholesale departments. The experiences of the Changzhou Municipal Special Store for Minor Commodities (for both wholesale and retail sales) deserve to be popularized. Third, the supply and marketing cooperatives should be permitted to deal in the wholesale selling of minor commodities, while, at the same time, the state-run retailing enterprises, the collective commerce and the individual peddlers should be permitted to sell minor commodities in the countryside as additional channels of circulation. Fourth, if conditions permit, minor commodity wholesale markets can be set up in cities at or above the county level so that the production units owned by the whole people or by the collectives can sell their own products right there. This will provide a convenient source of procurement for retail enterprises and individual peddlers as well.

(4) Enlarge the disparity between wholesale and retail prices in order to arouse the enthusiasm of the minor commodity retail enterprises. In the distribution of profits, we believe that the principle that "industry should have a larger share than that of commerce" should not be upheld (because this principle itself deserves further study), and that the disparity between wholesale and retail prices should be greater for minor commodities than for major commodities, so that greater, or at least not less, profit can be earned from the retailing of minor commodities. Then there will no longer be reluctance to deal in minor commodities while everyone joins in the scramble to sell major commodities.

3. Opening a new road for the healthy development of sales of industrial products by the industrial departments. At present, sales of industrial products by the industrial departments themselves are one of the focal points of conflict between industry and commerce. It is our understanding that the majority of people in the commercial departments favor a reduction or even the abolition of such sales, while the majority of people in the industrial departments want to increase such sales. However, while the department in charge of sales under the industrial bureaus or companies strongly insists on selling its own products and even expanding of such sales, some production enterprises oppose this idea and prefer to sign contracts with the commercial departments so that they can be free to devote their energy to production instead of worrying about sales, which will then be the responsibility of the commercial departments.

In order to put the sales of industrial products by the industrial departments on the road of healthy development, we are of the opinion that first of all, priority in the supply of raw and semifinished materials and the power required should be guaranteed for the production of industrial consumer goods under the 10 major categories, if this is permitted by the plan for overall balance in the national economy, and the plan should be carried

out in various localities, departments and enterprises. If the planned balance cannot guarantee the supply of some of these raw and semifinished materials or power, the enterprises concerned should be permitted to find their own method of procurement, such as through negotiated prices. Second, the contradiction between industry and commerce in the distribution of profits should be reasonably resolved. Aside from the adjustment of price disparity or price parity, and the distribution of profits, the procurement prices of industrial products in short supply should be raised. In this way, the commercial departments will have to give up some profits so that the industrial departments will have a larger share. This will be an incentive to the production departments to increase the production of goods in short supply. Third, we can follow the example of Changzhou Municipality in gradually developing industrial-commercial integration for the sales of industrial products. This will harmonize the relationship between industry and commerce and arouse their business enthusiasm. Finally, for long-range planning, the system of integrated production, supply and marketing should be adopted for some products calling for high technology and intensive post-sale services, such as electronic products and durable household consumer goods. This should be the direction of future development.

4. The establishment and gradual development of "circulation centers." In some cities where the local production of industrial consumers goods is fairly well developed and communications and transportation are convenient, one or more "circulation centers" should be established. The market for trading materials set up by the material departments in Changzhou is in fact an experiment in organizing "circulation centers" for materials. This is an inspiration for the organization of "circulation centers" for the means of subsistence. The commodity circulation centers should be set up as show windows for local products, as information centers for new products at home and abroad, as exchange centers for local commodities, and as collection and distribution areas for incoming and outgoing commodities. "Circulation centers" can be either financed by state investment or be run as corporations by the shareholders. A further alternative is to raise the required funds by leasing some equipment to outsiders. In any case, they should be run in the form of enterprises with independent accounting and responsibility for their own profits and losses. They should also be responsible for various economic activities related to the circulation of commodities, such as their transportation, storage, separate packing and deliveries. The "circulation center" should gradually set up its own modern warehouses, cold storage, distribution ground, delivery equipment, transportation vehicles and other facilities for serving the movement of commodities as well as hotels, restaurants, entertainment places and other daily conveniences for the purchasing of marketing agents.

5. Develop market forecasting and strengthen planning for the production and circulation of industrial consumer goods. According to investigations, some industrial and commercial enterprises and the relevant departments have expressed the view that in strengthening planning for production and circulation and in bringing into play the regulative role of the market, we must first strengthen the macroeconomic forecast of the entire country

and the various local market forecasts. For many years, many industrial and commercial enterprises have been accustomed to the plans of a mandatory nature for their production and marketing, so that when they are suddenly required to make their own decisions on their production and management, they do not know what to do and may sometimes act blindly. The recent blind production of fluorescent lamps is one instance.

Along with the progress of national readjustment, we should vigorously develop the work of market forecasting. The relevant government departments can conduct partial economic forecasts, based on macroeconomics, and periodically issue numerical data to show the trend of developments in the production of various major categories of goods, the rise in people's standards of living, the changes in supply and demand relations, and the market conditions for the principal products. These data can be used by various localities, enterprises and departments as the macro-basis in making business policy decisions. The localities and enterprises should also cooperate with one another in providing accurate market forecasts in their own localities to guide the development of their economic activities.

6. Readjust the prices to facilitate the clearing of circulation channels. There are many problems with commodity prices on the market, and these problems are so complex that special investigations and study are required. Based on our recent investigations, many factors unfavorable to commodity circulation are related to prices, as shown in the following examples:  
1) The increase in the prices of raw and semifinished materials and processing without any change in the wholesale or retail prices will bring hardship to the enterprise concerned. 2) If prices remain low for a long time, the daily output will be reduced until finally the product may disappear from the market. On the other hand, high prices which remain unadjusted for a long time may encourage blind production, with overstocking as the result. 3) Lack of the necessary price disparity and price parity, or insufficient price disparity and price parity, may hamper the increase of designs and varieties of the products. On the question of market prices, in making readjustments we believe that we should be strict with retail prices and lenient with the wholesale prices and with various price disparities and parities as a matter of principal, so as to promote production and circulation. In short, solving the problems and removing the obstacles in circulation, our purpose is to accomplish the flow of products from production to consumption with minimum time and labor in circulation. If every product can move quickly in the process of circulation, the amount of commodities available on the market will be increased. If all commodities can move along the circulation line in accordance with the objective requirements until they are consumed, then the role of circulation can be brought into full play in promoting production and in meeting the requirements of consumption.

FOREIGN TRADE

BRIEFS

RUBBER, PLASTICS EXHIBITION OPENS--Tianjin, 24 March (XINHUA)--An international plastics and rubber industries technology exhibition opened here this morning. Vice-Mayor of Tianjin Wang Guangying cut the ribbon for the show. Organized by the Canada branch of the American-Asiatic-European Enterprises (AMAEE) holding corporation, the exhibition is attended by more than 60 companies and firms from Canada, Japan, Britain, the United States, the Federal Republic of Germany, Switzerland, Sweden, Italy, Belgium, Austria and Hong Kong. The exhibits, covering a floor space of 4,000 square meters, include machines and equipment for plastics and rubber processing and raw materials and chemical products. Among the more than 500 peoples attending the opening ceremony were Wang Wenzhe, Chinese vice-minister of light industry; Xiao Fangzhou, vice-chairman of the China Council for the Promotion of International Trade; and representatives from Chinese provinces, municipalities and autonomous regions. [Text] [OW242339 Beijing XINHUA in English 1520 GMT 24 Mar 82]

CSO: 4020/113

## PROSPECTS FOR ECONOMY IN 1982 SURVEYED

Hong Kong CHENG MING in Chinese 1 Feb 82 pp 54-58

[Article by Jiang Yi [3068 6654]: "Prospects for China's Economy in 1982"]

[Text] Walking a New Road--Straight Ahead

The editorial offices have forwarded letters from a great many readers who hope that this writer will give his views on China in 1982, in particular on China's economy in 1982.

In a New Year's editorial, RENMIN RIBAO gave three rather specific factors (ideological unity of the party, finding a new road for economic development which is suited to China's situation and a rise in the positive feelings of the masses of people) as evidence that "each year is better than the last, which certainly means that this year will surpass last year." Is this outlook correct?

It appears that this year's economic development can be analyzed as follows. The Fourth Session of the Fifth People's Congress has just opened and the economy is the dominant issue; what has drawn commendation has not only been the achievements already made in economic stability, but the fact that the lines, principles and policies have been derived through summarizing the experience and lessons in the process of setting things to rights and rectifying the guiding ideology. What was most valued in Premier Zhao Ziyang's report was the second part--the principle of future economic construction--from which last year's economic situation can be discerned and this year's and future years' economic prospects can be projected.

In his report, Zhao Ziyang mentioned:

The road--really proceeding from the actual situation in China. The old way of doing things which was guided by "leftist" thinking for a long time should be changed thoroughly and a road which is genuinely faster, economically more beneficial and from which the people can derive more benefit should be taken.

The central issue is that in the future, in considering all economic questions, the fundamental point of departure must be to increase the economic benefits so that China's economy can continue to improve.

The principles--the economic lessons of the 32 years since the founding of the People's Republic of China suggest 10 principles: 1) accelerate agricultural

development by relying on policy and science; 2) place the development of the consumer goods industry in an important position; 3) readjust further the service aspect of heavy industry; 4) increase the efficiency of energy usage and strengthen construction of the energy industry, communications and transport; 5) carry out technical reform in an emphatic and measured way and fully develop the role of existing enterprises; 6) carry out comprehensive rectification and necessary reorganization of enterprises by groups; 7) emphasize the ways of producing, collecting and using finances, and increase and economize on construction capital; 8) maintain a policy of openness toward foreigners and increase our self-reliant abilities; 9) positively and safely reform the economic system and fully and effectively mobilize the initiative of all sectors; and 10) raise the level of scientific culture of all laborers, vigorously organize scientific research attacks on key problems, proceeding from the ideal of everything is for the people, and carry out comprehensive planning for production construction and the people's standard of living.

Summarizing these roads and ordering these principles was really difficult. In the end it was achieved in exchange for the untold hardships and the tearful and bloody course which the 1 billion Chinese people have gone through in the last 30 and more years; it was not so much experience as it was a lesson. If from now on things are done according to these roads and these principles, no matter what, compared to the past it will certainly be less painful and tortuous and have more advantages and material benefits.

Therefore, Zhao Ziyang was rather general when he talked about the main tasks of economic development in 1982: to consolidate the achievement of a stable economy, to continue to maintain a basic balance of financial and credit revenues and expenditures, and to strive to increase economic benefits, so that the rate of national economic development will be a little higher than in 1981. The main quota demands which have appeared in the papers are only: a 40-percent increase in the growth rate of the gross value of industrial and agricultural production and an approximately 4-percent increase in national revenues last year. In the distribution of national income, he called for a consumer sector increase of 5.7 percent, a society gross commercial sales increase of 8 percent, an accumulation sector increase of 3.2 percent, an increase in the directly arranged investment in the national budget of 5.7 percent, and an increase in expenditure on education, science, culture, public health and physical culture of 5.9 percent. But the people after all see the direction ahead and where to look for hope from the above roads and principles.

It should also be added that when explaining the last policy, Zhao Ziyang said: "Continuously increasing society's productive forces and gradually satisfying the daily increasing material and cultural needs of the people is the main aim of socialist revolution and construction. Our implementation of economic construction at bottom is a contradiction between resolving the daily increasing material and cultural needs of the people and the productive forces of a backward society." In the more than 30 years of leading China's socialist revolution and construction, if it is now considered that the relationship of social production and the people's standard of living is recognized correctly and the position of the people put in order, even if this realization has come late, it is still delightful progress. And for this reason, the wording of the "1982 plan for economic and

"social development" should not be belittled. Although it is still missing a few words, speaking of "economic and social development" is much more comprehensive than merely speaking of "economic development," because it takes into account all the needs of the people within the development of society as a whole. Changing these words is not a battle of terms, but a reflection of the progress in ideology and a change in the way of doing things.

#### Overcome Difficulties--Uphold Practice

Of course, it definitely cannot be said that the Chinese Communist Party has understood and mastered the laws of socialist revolution and construction, much less that these 10 principles are perfect in every way and that to summarize and follow them completely is all that is needed.

This is definitely not the case.

On the one hand, the present Chinese communist leaders have really wanted to improve China's economy, so they conscientiously summarized the experience and lessons of the past 30 and more years. Cruel reality has educated them, and all in all they learned better than the leaders of the past. If they do not proceed from China's conditions again in improving the economy, not only will there be no political stability to speak of, but there will also be problems in leadership. However, various limitations, both subjective and objective, also keep them from understanding comprehensively and thoroughly the laws of socialist economic construction, and the Chinese communist leaders should have a clear understanding and appraisal of this.

Therefore, what Zhao Ziyang said when looking back on 1981—"In the past year, our economic work advanced in consolidating existing achievements and overcoming the difficulties facing us, and in the process of further summarizing experience and improving understanding"--should also apply to 1982 and the years ahead. Does this mean that it is not in constantly overcoming difficulties and obstacles, constantly summarizing experience, consolidating achievements and improving understanding that they advance? Does this mean that changes and developments should not be made in practice according to the actual situation and matters be gradually revised, supplemented and perfected?

The facts show that in terms of these 10 principles, there are many problems waiting to be resolved: the development of agricultural productive forces and contracting production down to the household; arranging the proportional relationship of agriculture, light industry and heavy industry; methods of system reform; improvement of economic benefits; the relationship of economic readjustment and rate of development; managing a planned economy and market mechanisms; arranging accumulation and consumption, production and standard of living... all the way to family planning, investment in education, developing science and culture, etc. These are really old questions, and new questions keep on being added to the pile. They need to be constantly summarized, revised and improved in the process of upholding practice.

On the other hand, the obstacles and difficulties which exist for cadres in carrying out the new principles and road must also be viewed and estimated soberly.

Some people still do not understand very well that change is possible only through education; some people have been severely affected by "leftist" poison, their burden is very heavy; bad old practices die hard and it will take even greater effort to make them change. In sum, there are a great many people who will accept unhurried and negative implementation, and domestic reporting has already made the situation known, so the Chinese communist leaders should regard this situation seriously and conscientiously make an effort to change it; otherwise, it will be impossible to speak of "steadfastly walking the new road of economic development."

In addition, the gang of four lackeys and other parties are even more covetous. They will not put down the butcher knife and turn into enthusiasts overnight, but will wait for a chance to launch a counterattack. It is said that when Huang Huo-qing [7806 3499 7230], gave the Supreme Procuratorate's work report at the Fourth Plenary Session of the Fifth National People's Congress, he said that the remaining evil elements of the gang of four were secretly gnashing their teeth and saying that they regretted not having completely gotten rid of those old guys (meaning the old cadres) in those years. This struggle can be treated even less lightly.

The facts also show that if the cadres and masses further unify their understanding, fully understand the significance of the new road and the new principles, join together, strive together, steadfastly advance, and seriously and conscientiously keep on practicing, summarizing and improving, then they can develop the economy and improve the standard of living. Only in this way can the poison of the gang of four and the leftist economic thinking be thoroughly eradicated and the secret plans of the evil remnants of the gang of four be smashed.

#### Reduc : Agencies--Correct Party Style

In order to lead all the Chinese people steadfastly on the new road of economic development, it is first of all necessary to demand practical action of the Chinese Communist Party Central Committee and the State Council, and the two most urgent needs now are to overcome bureaucratism, mainly reducing the size of agencies, and to correct the party style.

Deng Xiaoping has ranked bureaucratism as one of China's three present evils; Zhao Ziyang views the bureaucratic tendencies ("tendencies" is an understatement) which exist in China's political life and economic management as the most serious obstacles on the new road to developing the national economy and carrying out the four modernizations, and these are sore points. At the Fourth Session of the Fifth National People's Congress, Zhao Ziyang stood, saying that carrying out agency reform should "be completed within a short time." He said that recently, on the basis of a Chinese Communist Party Central Committee proposal, the State Council conducted repeated studies and discussions on the question of overcoming bureaucratism and decided to take decisive measures to steadfastly change such intolerable situations as too many departments, bloated agencies, multiplication of administrative levels, mutual wrangling, overstaffing, too many deputies, and sinecures and very low work efficiency, so as to lead modernization work effectively. It is said that although Zhao Ziyang's speech was only 700 or 800 words long, he was interrupted by stormy and sustained applause six times at the People's Congress and the People's Political Consultative Conference. The people's thoughts and feelings are very clear.

Starting with the departments of the State Council, agency reform will "be carried out within a specific time." What a pleasant sound! Now, high and low throughout the country, people are looking expectantly toward the Zhongnanhai. Just how is the State Council going to take the lead? Is it really ready to wield the knife? The senior and important officials have both power and position. Are they willing to stand aside?

It should be said that since the National People's Congress and People's Political Consultative Conference meeting, the discussion in the press concerning reducing agencies has been fairly enthusiastic. Reading these firsthand exposes really make one sigh and shake one's head, not knowing whether to laugh or cry. Right after the People's Republic of China was founded, the State Council had 4 committees and 30 ministries. Now the committees and ministries have increased to more than 100, but the work efficiency has not increased commensurately. In the State Council ministry system alone, there are nearly 1,000 ministers and deputy ministers, nearly 5,000 department and bureau chiefs, and some ministries have more than 20 ministers and deputy ministers. But those below follow the example set by their superiors, and from the Central Committee down to the local areas, everywhere there is a forest of departments, bloated agencies and overstaffing. There are many temples, many gods and many spirits. People say that the more heads an agency has, the worse it does its work, with the result that there is no head. Living examples of this can be found everywhere.

Zhao Ziyang dared to declare his stand at the National People's Congress and the People's Political Consultative Conference; he decided to stir up a hornet's nest, so of course, people can guess that this decision was made after study by the Chinese Communist Party Central Committee and can even imagine that he had in hand the proposal and draft resolution on reducing agencies and opposing bureaucratism. Otherwise, would he have been so bold and determined? But in spite of this, people still generally have taken a wait-and-see attitude: "If you want to know more, wait for the next chapter." If it is really done, then people will naturally be overjoyed.

While reducing agencies is only one link in overcoming bureaucratism and a demonstration of overcoming the various present difficulties, correcting the party style is a fundamental and important matter which has even more influence on the entire party and nation. If this is not resolved, there will be no way to resolve bureaucratism and the other things.

#### Honest Advice--a Stern Warning

On New Year's Eve 1981, RENMIN RIBAO published a lecture by Chen Yun [7115 0061] entitled, "We Should Talk About Truth and Not About Face." That this lecture, which was published 9 May 1945, i.e., 36 years ago, was republished on this date for cadres to study with the demand that they carry it out, really makes one shake one's head and sigh, not knowing whether to laugh or cry. Over 30 years have passed, going through the victory of the War of Resistance and the War of Liberation, and the Chinese Communist Party has grasped national political power, but right up to carrying out socialist revolution, right up to today, the Chinese Communist Party still has not made much progress. The old weaknesses are still around and it has come full circle back to where it started, so how can it face the hundreds of millions of people?

Of course, Chen Yun's lecture was only an introduction to get people thinking. In the past few years, hasn't Chen Yun bitterly and with great frankness explained repeatedly that the question of party style is a question of the survival of the Chinese Communist Party?

Right after the publication of Chen Yun's speech on New Year's Eve, on New Year's Day, RENMIN RIBAO shamelessly published a discussion by several old cadres on the meaning of Chen Yun's speech, choosing in particular New Year's Day, a day for discussing auspicious things, to ruthlessly expose the scars of the Chinese Communist Party, and this has particular significance. Seeing these 70-, 80- and 90-year old meritorious senior statesmen sign their names to this discussion and reading their vehement and earnest speeches, one recalls especially that the high officials of the Chinese Communist Party themselves admit the serious incorrect style existing within the party and admit that some party members and cadres are already, or are now becoming, corrupt, and have begun lording it over the people. They say clearly that some old cadres are disappointing and outrageous.

To let ordinary people say this sort of thing is to accept the fact that the people are disunited and rebellious, but now distinguished, meritorious, brave and highly placed old cadres have pointed out that their companions and those of their own ranks should be trusted implicitly in their incorrect style in politics and economics!

How can this be done? Hu Yaobang has repeatedly warned the Communist Party's highly placed cadres and ordinary cadres that they should write their own history, and write it with their own actual deeds. Representing the Chinese Communist Party Central Committee, he said that in 1982 the Chinese Communist Party style will be made to take a decisive turn for the better. This is really honest advice and a stern warning directed at a temporary illness.

But the people have adopted the same kind of wait-and-see attitude and are looking toward Beijing. Can it be done? Can it be carried out?

#### If the Party Style Doesn't Change--China Has No Hope

My main aim has been to describe the prospects for the national economy in 1982, but I have devoted a great deal of space to the overcoming of bureaucratism and rectification of the party's incorrect style, which are matters of the superstructure and politics and on the surface seem a little far from the topic. But actually this is not the case.

In a country in which the Communist Party is in power, rule by men frequently supersedes rule by law and the position of politics supersedes the economy by far, so if the party style is incorrect so that the party members degenerate and party discipline is nonexistent, can these cadres carry out the party line, principles and policies? They deal with matters from the perspective of individual interests; with regard to correct things there is only negative treatment, feigned compliance, duplicity and even public resistance. They break the law and violate party discipline, abuse their power, recklessly grant bonuses, and engage in bribery, smuggling and tax evasion so that in an even larger economic property

a hole will be nibbled. As concerns disregard for party principles, pulling strings, trading on connections, and "using the back door," needless to say, if the common people see these things, how can their initiative be brought into play? If one's heart is set on being an official, how can he look on bureaucratism as an evil and try to eliminate it?

Bureaucratism and the party's incorrect style are not things that have just come up. What may be delightful and at the same time of some serious regard is that in 1982 the Chinese Communist Party Central Committee has written a "blank check" and made a promise, a pledge. Hu Yaobang and Zhao Ziyang have only taken stands as representatives of the Chinese Communist Party Central Committee, which has certainly done the research. Thus the people are watching them cash the check. 1982 has thus become a crucial time. If the reform of agencies to be completed within a specific time as demanded by Zhao Ziyang cannot be accomplished this year and if in the decisive turn for the better in party style this year, as demanded by Hu Yaobang, the incorrect party style remains unchanged--China's affairs (in particular, the economy) will be in difficult straits.

The people's present ideological attitude toward change and the elimination of disaster is distrustful, suspicious and wait-and-see. And no wonder! But we believe that if the Chinese Communist Party can really sense the people's dissatisfaction and hardship and can firmly deal with the present calamities of incorrect style and bureaucratism, any slight actual change will have an enormous impact, produce a chain reaction and play a very good role.

Under these circumstances, 1982 has become a year worthy of close attention. A discussion of the economy and other matters in China in 1982 cannot ignore these factors. Otherwise, it will be hard to see how things in China can be better this year than last.

8226  
CSO: 4006/301

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ORG: Deputy Chairman, State's Economic Committee

TITLE: "Some Important Measures for Improving the Economic Benefits of Enterprises"

SOURCE: Beijing QIYE GUANLI [ENTERPRISE MANAGEMENT] in Chinese No 1, 19 Jan 82  
pp 6-8

**ABSTRACT:** Learning from the advanced technology and economic management experience of Shanghai is a very realistic way of developing the existing potential, increasing production, and improving the economic benefits of enterprises. In Shanghai, for every 100 yuan of fixed asset, the realized product value is 285 yuan and the profit is 83.5 yuan. The national average is only 101 yuan and 24.3 yuan respectively. The experience of economic management of the advanced enterprises in Shanghai are summarized into the following: (1) The central work of many enterprises in Shanghai have developed from merely producing to running a business. Through visiting customers, surveying, market analysis, etc. 98 percent of the products are now suitable for sale. (2) By organizing specialized industries into companies, linking raw material producers with processing, producing, and sales outlets, etc. Shanghai enterprises have broken the traditional ideas of departmental and regional boundaries. (3) Using modernized management techniques, such as cost engineering analysis, information system management, behavior science, etc., to improve production. (4) Instead of emphasizing simple skills, attention is given

[continuation of QIYE GUANLI No 1, 1982 pp 6-8]

to developing talents. (5) Through reforming the structure of the products to improve quality, to serialize, and to establish name brands, the value of the products becomes higher while the raw material and energy consumption remains the same. Each of the above is elaborated in some detail.

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TITLE: "An Inquiry Into Financial Management Reform in the Processing of Reorganizing an Enterprise"

SOURCE: Beijing QIYE GUANLI [ENTERPRISE MANAGEMENT] in Chinese No 1, 19 Jan 82  
pp 48-49

ABSTRACT: The current financial management system of China's industrial enterprises is basically something learned from the USSR in the 50's. Although it is somewhat scientific, it is established on a foundation of a production operation of highly concentrated authority and general absorption of profits and losses. Shortcomings of this system are, therefore, numerous. Some local enterprises only think of their own benefits. They keep a great deal for themselves or pay their workers a great deal and do not care if the income of the state is being reduced. The aim of a reform is to preserve the public ownership of socialism and at the same time the relative independence of the producers of products. In the original system, the 2 items of sales and supplies are combined into one. It did reflect the receipts and expenditures of the enterprise when both supplies and sales were handled by the state. Now that the 2 channels of state's plan and the open market exist side by side for both sales and supplies, the original system becomes ob-

[continuation of QIYE GUANLI No 1, 1982 pp 48-29]

viously deficient. The author suggests that now sales and supplies must be listed in the books as 2 parallel items, with subdivisions under them for the purpose of recording, calculation, and management. In this manner, the condition of implementation of the state's plan may be reflected in the books, and at the same time, the enterprise can also analyze the effects and changes on the receipts and expenditures of the enterprise brought on by the portion that is the state's plan and the portion that is the open market, so that on the one hand the enterprise can adjust its operation according to the market fluctuations and on the other hand it cannot blindly respond to the market place with purchases without implementing the state's supply and sale plan. The income of the workers may be listed as one item but under that item there should be sub-items reflecting the sources of the payment and the condition of disbursement so that there is a basis for controlling the abuse of awarding bonuses. Other needed reforms of the accounting system are also discussed.

6:42  
CSO: 4011/54

AUTHOR: LUO Zong [5012 1350]

ORG: Institute of Economic Research, Shanghai Academy of Social Sciences

TITLE: "Problems of Theory and Implementation of the System of Economic Responsibilities"

SOURCE: Shanghai SHEHUI KEXUE [SOCIAL SCIENCES] in Chinese No 6, 20 Dec 81 pp 1-6

**ABSTRACT:** The system of economic responsibility has been extended very rapidly in industrial, commercial, and financial systems in the past 6 months and has effectively encouraged positiveness among the workers and overcome the egalitarian attitude among industries and among workers within an industry. It has promoted reform and improvement of technology, equipment, and management and obvious yield increase and profit increase results have been obtained. In the process of its extension, many easily ignored problems have also arisen, however. For example, some industries pursue profits only and some workers chase after bonuses all the time. They are not willing to make and trade things that are low priced and produce little profit but are needed by the society. The quality of products is ignored. The quota of some industries has been set too low to result in an excess of profits. Some industries have adopted improper means to seize illegal profits in violation of financial laws of the state. For the purpose of ensuring healthy development of the economic responsibility system, this paper discusses these new conditions and problems and correct ways of handling them.

AUTHOR: LU Qiaozhen [7627 1564 3791]  
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ORG: Both of Research Institute of Departmental Economics, Shanghai Academy of Social Sciences

TITLE: "A Survey of Forms of Economic Responsibility System of Shanghai Industries"

SOURCE: Shanghai SHEHUI KEXUE [SOCIAL SCIENCES] in Chinese No 6, 20 Dec 81  
pp 27-31

**ABSTRACT:** There are 2 links in China's economic responsibility system: the system of economic responsibility of an industry toward the state, and the system of economic responsibility within an industry itself. Discussions of this paper concern only the former. In the past 2 years, following a gradual expansion of the right of self-determination of industries in the process of reforming the economic management system, industries of Shanghai have, in steps, established many forms of profit and loss responsibilities. The system now involves 1,434 industries, amounting to 74 percent of all industries of the city. The numerous forms of the system may be divided into 3 categories: (1) Retaining a percentage of the profit; (2) Beyond a contracted limit of loss or profit set by the state, the industry is left [by the state] to fend for itself; (3) Pay a tax instead of profits to the state with the industry taking care of its own profits and losses. These 3 forms are analyzed at length, with comments on the suitability and appropriateness of each.

AUTHOR: YU Kuyuan [0151 2688 0626]

ORG: None

TITLE: "Relationship Between the Market and Industrial Development in Shanghai"

SOURCE: Shanghai SHEMUI KEXUE [SOCIAL SCIENCES] in Chinese No 6, 20 Dec 81  
pp 40-42

ABSTRACT: Shanghai has for a long time been China's important industrial base as well as a commercial harbor, having the 3 markets of the export, the inland, and the local, in a ratio of 36.7, 47.1, and 16.2 percent respectively. From 1977 to 80 the export market averages a growth of 24 percent annually, greatly outpacing the other 2 markets. Considering the size of the country, the export trade of China is only 0.92 percent of the world volume, and that of Shanghai a mere 0.22 percent. Most of the exports are inexpensive textiles and handicrafts destined for Third World countries in the Middle East, the Southeast Asia, etc. Although there have been advances in textiles in inland regions, the greater development of agriculture of recent years has resulted in an even faster increase of purchasing power among the farmers. Production of industrial products lags far behind the demand. In the 3 years of 1978-80, the growth of purchasing power of the local market equals the total of all 18 years from 1957 to 1975. From 1978 to 1980, the annual average growth of the Shanghai Market is 16.8 percent; nationally, it is 12.2 percent. This paper reviews various market conditions in Shanghai, discusses the progresses and the shortcomings, and recommends numerous strategic targets.

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ORG: Both of Economic Research Institute, Shanghai Academy of Social Sciences

TITLE: "Investigation of the Bonus Distribution Problem Within an Enterprise in Shanghai"

SOURCE: Shanghai SHEMUI KEXUE [SOCIAL SCIENCES] in Chinese No 6, 20 Dec 81  
pp 32-35

ABSTRACT: The economic responsibility system being extended in China contains 2 major aspects: the economic relationship between the state and the enterprise and the internal economic relationship among individual of various ranks within an enterprise. The 2 relationships are interrelated. They serve as the condition for one another and they supplement and promote one another to form the complete system of economic responsibility. With respect to economic responsibility within an enterprise, it cannot be simply interpreted as a problem of distribution according to labor although this is in fact the nucleus of the system. At present, the reward system in the cities is very different from that of the rural villages. In the latter, it is primarily a production responsibility system. In the former, under the condition of preserving the existing wage system, a method of distributing bonuses to reward above quota labor is introduced in the 4th quarter of 1978. This paper discusses primarily many forms of distributing bonuses currently being practiced by industries in Shanghai and the advantages and disadvantages of each form.

CSO: 4011/51

AUTHOR: None

ORG: Shanxi Provincial Bureau of Highways

TITLE: "A Survey Report Concerning the Implementation of the Economic Responsibility System in the Major Section of the Jinzhong [Central Shanxi] Highway"

SOURCE: Beijing GONGLU [HIGHWAYS] in Chinese No 2, 25 Feb 82 pp 8-11

ABSTRACT: The Jinzhong Highway's major section, measuring 1,358 km (583 km asphalt and 775 km sand surfaced) is divided into 14 maintenance segments and maintained by 1,471 workers. For the first 6 months of 1981, the province assigned a 64 percent rate of quality roads for the section. By the end of Jun 70.6 percent of it had reached the quality objective. The major reason for the success is the practice of a system of economic responsibility linking production with rewards. Judging from the 5 segments involved in this survey, the system is practiced in 6 different forms: (1) A variable wage system, determined by a monthly work quality evaluation system; (2) Assigning each worker 1 km of road and paving according to the quality of the work; (3) Distributing bonuses by amount of work in excess of quality and assignment; (4) A fixed quota of quality, time, engineering quantity, attendance, and safety, with bonus for all who complete the quota, extra bonus for those who exceed the quota, and penalty (2 percent of a month's wage) for failure to complete quota; (5) A piece work wage system; (6) Variable bonuses according to the performance of the team. Details of these forms are described.

AUTHOR: None

ORG: The Secretariat, China Transportation Engineering Society

TITLE: "The Conference Establishing the China Transportation Engineering Society Convened Triumphant in Fushan of Guangdong"

SOURCE: Beijing GONGLU [HIGHWAYS] in Chinese No 2, 25 Feb 82 p 41

ABSTRACT: The conference for the establishment of the China Transportation Engineering Society and Its First Scientific Exchange Conference were held on 20-24 Dec 81. Participants included 124 delegates representing departments of transportation of various provinces, cities, and autonomous regions, 8 related schools of higher education, the transportation department of the Military Committee, the Shanghai Municipal Transportation Engineering Society, etc. Members of the Board of Directors and the Standing Committee were elected and vacancies were reserved for the province of Taiwan. The conference received 78 papers, 17 of which were read at the meetings. Most of these concern the condition of development in China and results of experiment of transportation engineering. Development the field in foreign countries was also introduced. All the delegates went to Guangzhou to observe the new transportation installations, such as automatically controlled signal lights, yellow, flashing warning lights, reflective road surface lines, markers, and warning posts, automatic traffic counters, etc. There was also an exhibit, displaying highway network plans, national highway survey data, books and motion pictures on transportation engineering. The 1982 activity plan of the society was adopted.

Postal Technology

AUTHOR: HE Yongzhong [0149 3057 1813]

ORG: Director, Shanghai Bureau of Post and Telecommunication Management

TITLE: "Summarization of Research Work in Making the Automatic Letter Sorting System (Type I)"

SOURCE: Beijing YOUZHENG JISHU [POSTAL TECHNOLOGY] in Chinese No 1, 15 Feb 82  
pp 1-3, 11, inside front cover

ABSTRACT: This paper is a report delivered by the author last Oct at the expanded conference of the leadership team of the Automatic Letter Sorting System Research Group in Shanghai. The target of the research work, which began in Oct 74, included an automatic letter grader, a 150-column automatic letter sorter, the SK bundle-tying machine, and phosphorescent stamps, together constituting the automatic letter sorting system, type I. The prototype was ready for separate testing 3 years later and it was in Jan 81 when the entire system went through intermediate test operations. Under the condition of sorting 6 letters per second, the system rated a recognition accuracy of 89-94 percent, with a rejection rate of 5-10 percent and an error rate of 0.5-1 percent. The research work on the SK bundle-tying machine was undertaken by the Postal Science Research Institute of the Ministry of Post and Telecommunications in 1977 and testing of the prototype was completed in Dec 79. After several organizations tested the sample machines and proved them to meet the

[continuation of YOUZHENG JISHU No 1, 1982 pp 1-3, 11, inside front cover]

design requirements, one of these has been sent to Guangzhou Trade Center and later to Hong Kong for exhibition. The work on phosphorescent stamps began in 1975, jointly by Beijing Postage Stamp Printing Plant and Guangdong Provincial Research Institute of Post and Telecommunication. Relatively satisfactory phosphorescent material (ABT1-1) was successfully made in Sep 77 and 3 types of stamps were produced with it. Later, the less expensive ABT 1-50, capable of being directly used on the printer was made. In Mar 80, China's first set of phosphorescent stamps was officially issued. They are of the quality to be used for accurate classification on the automatic letter grading machine. At present, Shanghai is designated as the experimental point for the automatic letter sorting system and the shop has several automatic and semi-automatic machines, including the OER automatic sorter which is a gift of the USA. If the zip-coding process is smoothly accomplished by 1985, the equipment is expected to be able to handle 100,000 pieces of mail per hour to provide the needed experience for the establishment of a postal headquarters in Beijing by 1987.

AUTHOR: MA Gongtuo [7456 0361 2148]

ORG: Shanghai Public Transport Company

TITLE: "Improve Technical Quality [of Vehicles] by Strengthening Preventive Maintenance"

SOURCE: Beijing YOUZHENG JISHU [POSTAL TECHNOLOGY] in Chinese No 1, 15 Feb 82 p 16

ABSTRACT: The paper explains that the technical quality of a vehicle is the material foundation for guaranteeing its safe operation and preventive maintenance is the way to ensure technical quality. The subject of preventive maintenance is discussed in terms of the following: (1) The condition of wear of various parts of a vehicle varies with the location of the part, the effect of external conditions, the design, the make, the material used, etc. It is, therefore, necessary to carry out the preventive maintenance plan of each vehicle. (2) At present, preventive maintenance of vehicles is generally divided into the 3-class and the 4-class systems, in cycles of 2,000 - 8,000 km. If the objective of preventive maintenance is to be accomplished, a vehicle should be inspected, cleaned, lubricated, etc. according to the requirements when each of the operation cycle is reached. (3) The technical quality of a vehicle affects the fuel and lubricant consumption of a vehicle. The reason for the effect is briefly explained.

AUTHOR: KANG Keren [1660 0344 0088]

ORG: Beijing Municipal Postal Bureau

TITLE: "Several Viewpoints and Suggestions Concerning the Development of Postal Science and Technology"

SOURCE: Beijing YOUZHENG JISHU [POSTAL TECHNOLOGY] in Chinese No 1, 15 Feb 82 pp 44-47

ABSTRACT: The author explains that the following 3 conditions demonstrate the backwardness of and the need for developing postal science and technology: (1) The work condition of postal workers is extremely bad. Each person handles an average of 18 tons of mail a day in shops of a dust content of  $120 \text{ mg/m}^3$ . This is polluted dust coming from everywhere in the country and the world. (2) The work efficiency is low and mail delivery is slow. Local mail in Beijing takes 2-3 days to reach its destination. (3) The volume of mail is increasing and the postal bureau does not have sufficient plants and manpower to meet the demands for its service. Concerning directions of development, the author suggests: (1) More research to provide technical equipment to speed up delivery; (2) A national postal network should be organized and managed as a giant system engineering project; (3) Realistically develop mechanization and semi-automation according to the research, industrial, and economic conditions of China; (4) To save cost, the development should be gradual in carefully planned steps.

6.42

CSC: 4011/52

Railway Communications

AUTHOR: LI Tingfang [2621 1694 5364]  
DU Fengge [2659 7364 7041]

ORG: None

TITLE: "Method of Locating Trouble Spots of the CZ Long Distance Automatic Exchange"

SOURCE: Beijing TIEDAO TONGXIN XINHAO [RAILWAY COMMUNICATIONS AND SIGNALS] in Chinese No 2, Feb 82 pp 5-8

ABSTRACT: If troubles of the CZ long distance automatic exchange are to be quickly and correctly determined, it is necessary to remember the circuit diagrams in accordance with the transmission signals. On that basis, the authors offer the following methods for the reference of the maintenance workers: (1) The first step is to check the voltage of the power sources, i.e. the -24 v and -60 v sources; (2) Diagnosis of troubles of the receiver; (3) Diagnosis of troubles of the incoming lines; (4) Diagnosis of troubles of the outgoing lines; (5) Diagnosis of troubles of the control circuits. Procedures for inspecting each of the above components are introduced briefly.

AUTHOR: None

ORG: Linear Crosstalk Experiment Group, Beijing Bureau of Railways

TITLE: "Linear Crosstalk and Balance of Occupied Segment of the Cable"

SOURCE: Beijing TIEDAO TONGXIN XINHAO [RAILWAY COMMUNICATIONS AND SIGNALS] in Chinese No 2, Feb 82 pp 9-11

ABSTRACT: This paper discusses the accumulation and instability of magnetic transfer or crosstalk in the occupied segment of the cable. Equations are introduced to calculate the minimum effect. The normal range of magnetic transfer is 2-7 percent, but according to the newly adopted maintenance regulations, it is considered below standard. Steps needed to balance the occupied segment to stabilize linear crosstalk in order to bring it to the new standard are introduced.

4-4-1  
CSO: 4011/56

AUTHOR: JIN Dongcan [6855 2639 3539]  
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Academy of Scientific Research

TITLE: "China's First Prestressed Concrete, Stayed-cable Railway Bridge"

SOURCE: Beijing TIEDAO JIANZHU [RAILROAD CONSTRUCTION] in Chinese No 2,82 pp 1-3

ABSTRACT: Prestressed concrete stayed-cable bridge is a new type of bridge structure, having been developed only in the last 2 decades. Its advantages include long spans, high adaptability, structural economy and reasonableness, convenient to repair and low noise. First such railroad bridge in China, the Hongshuihe Bridge, was officially open for traffic on 1 Sep 81. It is the 4th completed prestressed concrete stayed-cable railroad bridge in the world and its 96 m main span is second only to the one in W. Germany. The bridge, measuring 398 m in length on the Hunan-Guangxi Line was designed jointly by the Institute of Railway Construction, Research Institute of Metal Chemistry, and the Southwest Research Institute. The Liuzhou Railway Bureau was responsible for its construction. In the process of its construction, which began in Jun 79, participation and assistance were secured from the Survey and Design Academy No 2 of Ministry of Railways, Fengtai and Chengdu Bridge Factories, Northern University of Transportation, Lanzhou College of Railways, Qiqihar Bureau of Railways, etc. Photos and a drawing of the bridge are included.

AUTHOR: FAN Guolin [2868 0948 2651]

ORG: Baicheng Railway Branch, Qiqihar Bureau of Railways

TITLE: "Investigations Into Ways of Preventing Cracking and Reducing Vibration of Prestressed Concrete Track Ties"

SOURCE: Beijing TIEDAO JIANZHU [RAILROAD CONSTRUCTION] in Chinese No 2, 82 pp 9-14

ABSTRACT: Prestressed, steel reinforced railroad ties are low cost, long lasting, and stable. Their dynamic and static quality is better than wood ties and they require less maintenance as well. They are highly rigid, however and under heavy load, exert a strong force on the roadbed to cause it to sink fast and its load bearing surface to be broken. It is also relatively poor in reducing vibration. From a survey of the ties made by Fengtai Plant (1760 ties/km of roadway) which have been in use for 15 years (annual volume of transport is 18,000 thousand tons), the crack development rate is high, mostly central bending moment cracks. The method of using elastic rubber cushions under the concrete ties to reduce vibration is introduced. There are also several suggestions in improving the structural design of the tie and the roadbed to reduce the possibility of crack development.

6:48

CSO: 4011/55

Railway Technology

AUTHOR: DONG Zhaomin [5576 0340 3046]

ORG: Ministry of Railways Academy of Scientific Research

TITLE: "A Comparison of the Energy Saving Characteristics of the Three Forms of Railway Motive Power"

SOURCE: Zhuzhou JICHE DIANCHUANDONG [ELECTRIC DRIVE FOR LOCOMOTIVE] in Chinese No 1, 10 Jan 82 pp 2-4

ABSTRACT: This article considers a number of factors in analyzing the energy effectiveness of railway motive power. In the matter of reserves, China has 600 billion tons ( $\pm$  300 billion recoverable) of coal and an annual coal production of 610 million tons versus 106 million tons of petroleum. In the matter of efficiency, the steam locomotive, which hauls 80 percent of China's freight on a ton-kilometer basis, has a thermal efficiency of 6.1 percent versus 23.6 percent for electrification and 19 percent for diesel motive power. In the matter of national policy, it is necessary for China to conserve petroleum to gain foreign exchange through export. The national policy is to use "coal as the basis." From the efficiency standpoint, if electric power, which uses coal, replaced steam for 80 percent of China's traffic over 10 million tons of coal a year could be saved. On the other hand, if diesel replaced steam, China could lose \$997 million in foreign exchange. The known world reserve of 87 billion tons of oil are calculated to last 28 years at current rates of use. It would be hard to understand why China would undertake a dieselization

[continuation of JICHE DIANCHUANDONG No 1, 1982 pp 2-4]

program in the face of a world oil crisis. The USSR's 42,472 km of electrified track and its plans to electrify 6,000 more say the same. The fact that electrification is a secondary resource which can be derived from coal, oil, or hydropower is emphasized. The economics of certain individual lines in China are also considered. All these considerations lead the author to strongly conclude that the replacement of steam power with electrification can be the only main direction of motive power modernization on China's railroads. Having arrived at this conclusion, he goes on to add other considerations which he feels reinforce it. These include the matter of air pollution. He considers that China could electrify 1,000km of line a year, with 150 electric locomotives replacing 300 steam locomotives, leaving all main lines electrified by 1990. Diesels should be used on lines carrying less than 35 million tons of freight a year.

AUTHOR: DU Jingxuan [2659 1987 5503]  
HUANG Changji [7306 2490 4949]

SPG: None

TITLE: "Determination of Parameters of Controllers in the Automatic Control System of an Electric Locomotive"

SOURCE: Shushou JICHE DIANCHUANDONG [ELECTRIC DRIVE FOR LOCOMOTIVE] in Chinese No 1, 10 Jan 82 pp 18-23

ABSTRACT: At the present time there are 2 types of control systems for rectifier electric locomotives. They are constant current acceleration and constant speed control. Often in designing locomotives, in order to simplify the control system and its equipment the 2 systems can be combined, forming an automatic speed control system with constant current control. In this system the velocity feedback is the most important feedback and the current feedback is the component feedback. In the process of accelerating, the locomotive maintains fastest acceleration under constant current to utilize fully the adhesion characteristics of the locomotive. After the locomotive reaches the specified speed, speed control takes over. This kind of control system also has good resistance to the interference of voltage at the contact with an electrical distribution system. The transfer function for controlling rectified current is given. It involves the following parameters: The strength of the incoming rectified current, the strength of the outgoing current, that is the rectified voltage, the coefficient of rectification gain and a time

[continuation of JICHE DIANCHUANDONG No 1, 1982 pp 18-23]

constant. The article also discusses transfer functions for constant current acceleration, and constant speed control, as well as various feedback diagrams. The article concludes by pointing out that because several of the parameters cannot be computed or measured with great accuracy and because characteristics of many components in practice are nonlinear, the value of many of these parameters will vary under different conditions of work. Also many of the computational algorithms and mathematical derivations given in the article are not rigorous; the computational results can only be considered as tentative for further testing, and should be used with suitable care.

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Date: 4/11/82

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